IDG.net Experts: Process changes key to productivity gains. PAGE 38 *Computerworld ROI* honors 25 wireless innovators.

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AFTER THE ATTACKS: PROJECTS STILL ON

Despite uncertainties in wake of disaster, many users say IT plans remain intact

BY MICHAEL MEEHAN AND BRIAN SULLIVAN

While the stock markets faltered and the U.S. girded itself for a protracted battle against terrorism last week, many technology users vowed to forge ahead with their corporate IT projects.

Analysts said such vows could be quickly forgotten if the economy continues to sour. In response to the Sept. 11 terrorist attacks on the U.S., Framingham, Mass.-based market research firm IDC reduced the increase in worldwide IT spending that it's projecting for this year from 11% to 7.9%.

But in an informal poll conducted on *Computerworld*'s Web site last week, 75% of the 700-plus respondents said they had no plans to put IT projects on hold in the aftermath of the attacks. Eleven percent of the people who took part in the unscientific poll said they will likely postpone some projects, while 14% said they haven't decided what to do.

Some major users said in interviews that their plans haven't changed. For example, despite the economic hit that's being taken by the airline industry, Atlanta-based Delta Air Lines Inc. thus far isn't cutting its IT and e-commerce initiatives, said company spokes-

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More Inside

- ►The stream of IT volunteers keeps growing. PAGE 6
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- ►The Pentagon takes action to recover damaged IT operations. PAGE 13

ERIC YANG

CA RETOOLS

A kinder, gentler evolution at Computer Associates has made even its harshest critics sit up and take notice. And while the marks it gets from users are mixed, they're an improvement over the widespread customer anger of old. CA gets credit for improving its notoriously poor customer support, but pricing remains an issue on two fronts: mainframe software and contract negotiations. Users also hope that a more communicative CA will do a better job of laying out its future product strategy.

Stories begin on page 18.

NIMDA NEEDS HARSH DISINFECTANT

Worm exploits many system vulnerabilities

BY JAIKUMAR VIJAYAN

Cleaning up after last week's fast-spreading Nimda worm could prove to be harder and more time-consuming for users than it has been after other malicious software attacks.

Companies that aren't careful could be reinfected and leave back doors open for future exploitation, users and analysts said.

"Nothing is cleaning this virus. The tools out today simply delete or quarantine the infected files," said one frustrated e-mailer to *Computerworld* who requested anonymity.

"We have had 50,000 to 100,000 infected files in my data center alone, and we were patched all the way up [after the Code Red attack]," he wrote. "We are smart people. This one just won't be stopped."

The Nimda worm — reports of which first began flooding into mailing lists and security firms on Sept. 18 — is a mass-mailed piece of malicious code that infects systems running

Nimda, page 16

AT A GLANCE

Why Nimda Is a Nuisance

- **It spreads** via both network-based e-mail and Web browsers.
- **It modifies** critical system files and registry keys.
- **It creates** a guest account with administrator privileges.
- **It increased** average Web page download times to 3.07 seconds last Wednesday morning compared with 2.45 seconds the day before, according to a Keynote Systems study of 40 large businesses. Overall site availability fell from 92% to 90%.

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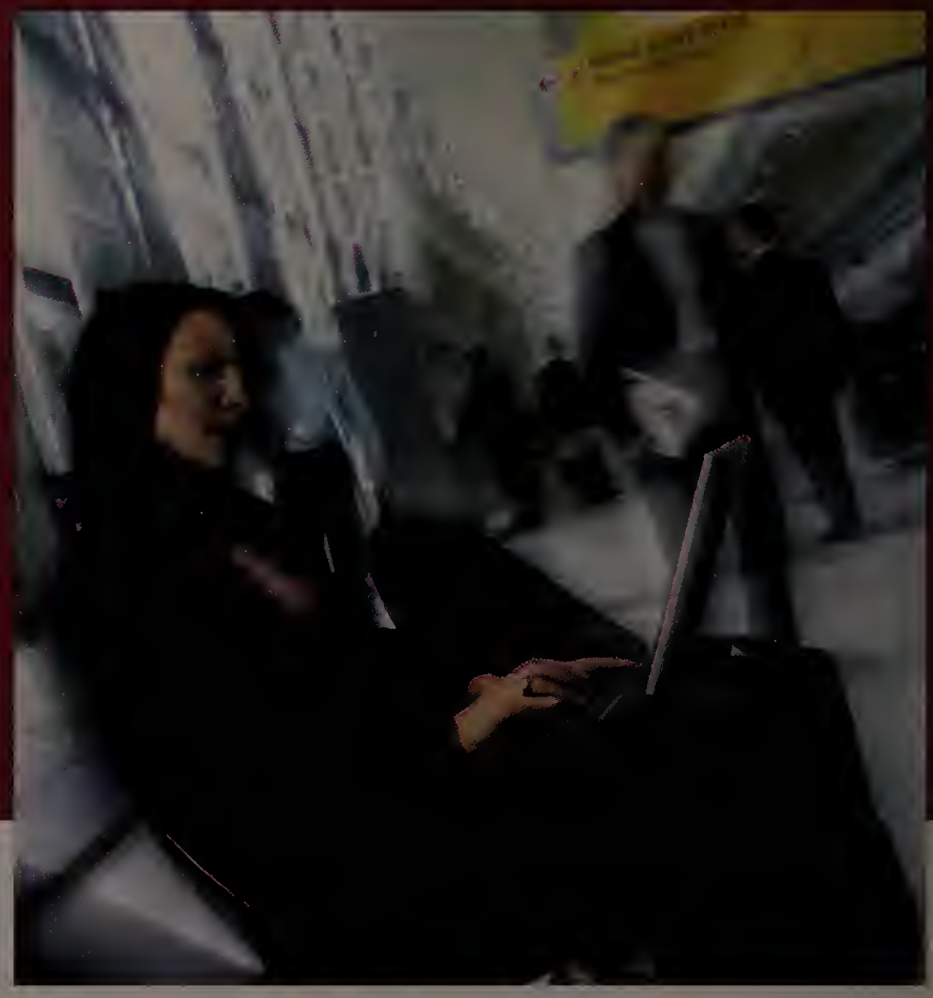

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HIGHER CALLINGS

While many IT firms and workers are looking to help out in response to recent tragedies, volunteerism is nothing new for entrepreneur Chuck Muller, who uses his technology and business skills to help widows and orphans in Cambodia. For more on how companies can start their own volunteer programs, see **PAGE 28.**

SERVER SIZE MATTERS

Servers are getting smaller, providing more computing power per square foot. But while small, rack-mounted servers create new space, they can also create new problems for users. **PAGE 50**

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14 Microsoft decides to open Passport up to its competitors.

16 EMC's problems persist as it warns of a loss and layoffs.

23 HP responds to users who say its high-end Superdome server is exorbitant by moving features down to other models.

23 Oracle says a slowdown in software sales had shown signs of bottoming out but that it now expects business to worsen because of the terrorist attacks on the U.S.

Quick Link

For breaking news, updated twice daily at noon and 5 p.m., visit the *Computerworld.com* Web site:
www.computerworld.com/q?q4000

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27 Joe Auer says ongoing vendor supply contracts should be clear in specifying how the ordering process works, including both parties' responsibilities.

32 Getting end-user input on application development isn't enough. IT project teams need to gain user interest from the start and keep them engaged.

34 Kevin Fogarty takes a look into the future and the mind of an IT vendor representative who longs for the glory days, when raking in revenue was easy.

38 Future productivity gains won't be driven so much by whiz-bang technologies as they will by continued business process improvements, experts contend.

43 Workstyles: IT staffers at Walt Disney World might not exactly whistle while they work, but the perks are pretty good.

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48 The back-end relationships among your ASP and other service providers are something to be aware of before you sign on, practitioners say.

52 Steve Lipner, program manager at Microsoft, talks to *Computerworld* about the Code Red worm and new tools for managing Windows security.

54 Future Watch: On the horizon are just-in-time compilers that find the quick, big payoff optimizations.

56 QuickStudy: Web services are self-contained, modular applications that are available for use by other applications over the Internet. Find out more in this week's tutorial.

57 Security Journal: Setting up a mobile remote office presents lots of wireless security challenges for security manager Vince Tuesday.

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24 **Maryfran Johnson** applauds the "comforting display of the human spirit at its very best" by the many IT professionals and vendors who volunteered to donate services and equipment after the terrorist attacks.

24 **Pimm Fox** says IT will have an increasingly important role to play in maintaining the security of Americans in the wake of the events of Sept. 11.

25 **Michael Gartenberg** writes that Microsoft's new Windows XP can offer significant benefits for some IT departments.

70 **Frank Hayes** says the Nimda worm and the recent terrorist attacks reinforce a call to IT: Be vigilant about information security.

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ONLINE

ATTACK AFTERMATH

For the latest *Computerworld* articles about the aftermath of the Sept. 11 attack on the U.S., visit our special coverage page:
www.computerworld.com/q?a1030

ROI ONLINE

Head to *Computerworld ROI*'s Web site for online-only features, including "Getting to the Bottom Line," in which two experts detail how to tally up the cost and value of wireless projects.
www.computerworld.com/roi

WIRELESS POTENTIAL

Wai Sing Lee, an analyst at Frost & Sullivan Inc., outlines reasons why he sees growth potential in wireless LANs.
www.computerworld.com/wireless

SECURITY CENTRAL

For the latest security news, as well as links to analysis, features, discussions, vendors and outside resources, see our Security Knowledge Center.
www.computerworld.com/securitycenter

AT DEADLINE

SAP Holds to Profit, Revenue Projections

Business applications vendor SAP AG said that it remains on track to meet its third-quarter revenue and profit projections. SAP is also holding to its prediction of 20%-plus revenue growth for this year, although it said it couldn't predict the impact the Sept. 11 terrorist attacks on the U.S. may have on fourth-quarter business conditions.

Comdisco Gets Time For Bankruptcy Plan

Comdisco Inc., one of the disaster recovery vendors to which users displaced by the terrorist attacks have turned for help, said a U.S. Bankruptcy Court judge gave it a two-month extension for filing a Chapter 11 reorganization plan. The period in which Rosemont, Ill.-based Comdisco has exclusive rights to propose a reorganization will now expire on Jan. 15.

Intel to Upgrade Chip Plant in China

Intel Corp. said it plans to invest $302 million to upgrade a semiconductor test-and-assembly plant in Shanghai so the facility can handle the new 845 chip set that works with the company's Pentium 4 microprocessors. The work at the plant is scheduled to be completed in 2004, Intel said.

Short Takes

U.K.-based application service provider MERANT PLC named Gerald Perkel as president and CEO, replacing Gary Greenfield, who said in June that he would step down from those positions. . . . A Belgian business court granted LERNOUT & HAUSPIE SPEECH PRODUCTS NV a nine-month bankruptcy protection extension after reviewing a new restructuring plan submitted by the leper, Belgium-based company.

Tech Volunteers Offer Resources to N.Y. Firms

In wake of attacks, help continues to pour in

BY MELISSA SOLOMON

BANKS, AEROSPACE firms, universities, magazines, software companies, retailers, manufacturers — the list of IT departments eager to donate time, resources and energy to help rebuild New York businesses destroyed in the recent terrorist attacks keeps growing.

Technology professionals from city, state and national governments have stepped up to the plate, as have the major IT vendors and Fortune 500 companies.

"I am a network admin/engineer," wrote one eager volunteer who signed up to help through *Computerworld*'s Volunteer IT program. "I would like to lend a hand wherever possible. I live in lower Manhattan and can be available somewhat quickly."

He's not currently working because his office was located at One World Trade Center.

"Whatever is needed, I just want to help my country and the awesome people who are already doing it," wrote a state of Connecticut employee, one of more than 2,000 volunteers who registered with Volunteer IT.

OperationIT is filling extra office space with displaced companies and is waiving all charges for its services for workers left unemployed after the attack and for employers that need to fill positions, said Garrett Schultz, director of sales for the New York-based employment Web site.

OperationIT has also created a feature that lets IT professionals wishing to volunteer to register at its site, which can be searched by all World Trade Center companies.

From high school students and recently laid-off programmers to CIOs, offers of free assistance have poured in from companies throughout the U.S. and from countries such as Mexico, Canada, Israel, Italy, England, Estonia and Costa Rica.

"Columbia Business School has more than 1,000 people who have indicated that they want to help with the relief efforts. Many have IT skills," wrote Michael Starr, vice president of information and infrastructure for the New York-based university's Graduate Business Association.

Sun Microsystems Inc. devoted approximately 1,500 employees to the disaster recovery efforts. It stripped its Sun Educational Services classrooms and sent 150 workstations to the stock exchange trading floor. It also stuffed 10 trucks with servers, cables, workstations and monitors to be delivered to the East Coast, according to Kevin Coyne, director of business operations for enterprise services at Sun.

PlaceWare Inc. in Mountain View, Calif., donated online meeting services to affected businesses and emergency and government agencies conducting disaster relief efforts.

"There are countless networks that need reconnecting/rerouting, new servers need to be put in place; a massive amount of work is ahead," said Mark Caron, president and CEO of MobileSpring Inc. in New York. "As a professional and a human being, I'm here to help. I'll go dig if need be." ◗

Willing to Help

If your business was damaged or destroyed in the terrorist attacks on the U.S., the following resources are available to you. In order to keep these contacts from being flooded with inquiries, please don't try to reach them unless you're the main contact at a business in need. If you're a volunteer willing to help, visit **www.computerworld.com/volunteer.**

- New York City Mayor's Hotline: **(718) 403-2220 or (800) 456-8369**
- Economic Development Corp. Hotline: **(718) 630-2457**
- OperationIT: **(888) 338-9595 or *www.operationIT.com*.**
- New York software firms destroyed or damaged in the attack can contact the New York Software Industry Association at **vdawson@nysia.org.**

***Computerworld* will provide additional contacts for businesses in need on its Web site (*www.computerworld.com*) as they become available.**

IT Visionary Lost in Attack

BY MELISSA SOLOMON

Perched in his office on the 103rd floor of the World Trade Center, Frederick T. Varacchi was on top of the world, literally and figuratively.

His view of the Manhattan skyline was extraordinary, but it was nothing compared to the mark he made on the financial services industry.

The 35-year-old chief operating officer and executive director of Cantor Fitzgerald LP and president and COO of eSpeed Inc., a business-to-business online marketplace, had climbed far fast. But it appears that on Sept. 11, the world lost Varacchi — and a true IT visionary as well. Varacchi is one of approximately 700 Cantor employees who are presumed dead following the terrorist attack.

Varacchi, trying to downplay his accomplishments, modestly told the story of his ascent to a *Computerworld* reporter who visited him at the World Trade Center in March.

VARACCHI, COO at Cantor Fitzgerald and eSpeed

His first big break came during his freshman year of college at Hempstead, N.Y.-based Hofstra University, when his former soccer coach offered him a job in the systems department at the local office of Northrop Grumman Corp., a Los-Angeles-based aerospace firm. Varacchi was only 18 at the time.

From Northrop Grumman, he went to Smith Barney in New York and then to a vice president position at The Chase Manhattan Bank NA. From Chase, he went on to Greenwich Capital Markets.

When Cantor's CEO, Howard Lutnick, hired Varacchi, he was looking for someone who could move the brokerage from its open-outcry system to an electronic trading floor.

Varacchi delivered on that promise on time and on budget, and within two years, he had spun the system off into its own company, eSpeed, which now runs approximately 50 online marketplaces and transacts more than $200 billion per day. In the first quarter of this year, eSpeed generated $43.1 million in revenue, a 78% gain over the same quarter last year.

"Many people underestimate how difficult it is to build the technology," said Varacchi, referring to competitors focused on launching fancy Web sites. "We never built anything as a team that was just a cool thing to build. . . . It takes focus, planning and hard work." ◗

Avoiding Travel, Users Turn to Communications Technology

Videoconferencing, Web collaboration use increasing in aftermath of attacks

BY MATT HAMBLEN

The Sept. 11 terrorist attacks prompted spice maker McCormick & Co. to suspend travel for all of its 8,100 workers worldwide. But by chance, McCormick had launched a global videoconferencing system just one week earlier.

By last week, all 14 videoconferencing locations were "booked full with one meeting after another," said Joe Callaway, director of telecommunications at the Sparks, Md.-based company. "People are turning to videoconferencing to meet their business needs."

The travel ban is due to last at least through next Sunday, and Callaway said McCormick will take advantage of it to encourage workers to use the new technology.

With similar travel prohibitions or restrictions in place at many companies, analysts are seeing a big uptick in video- and audioconferencing by users, as well as an increase in the use of Web collaboration tools.

Conferencing traffic "is way up, by 20% to 40%, no question," said Elliot Gold, a videoconferencing analyst and president of Telespan Publishing Corp. in Altadena, Calif. Gold surveyed 12 service providers and three conferencing equipment vendors in the aftermath of the attacks.

The sluggish economy had already pushed more companies to use conferencing technology, Gold said. But now, he added, the increase could be sustained for months. He said videoconferencing costs have come down steadily while video quality and synchronization with audio and data — once weak points for the technology — have improved.

Analysts said PC-based Web collaboration tools have also made advances, although users sometimes bolster their two-way video and document-sharing capabilities with phone lines for better audio quality.

At McCormick, about six people can videoconference in a room at one time. After initial troubleshooting, Callaway said, the videoconferencing systems from Vtel Corp. in Austin, Texas, are "working as one . . . and I'm not pulling my hair out."

Callaway also said the rollout has been "very affordable," with the 14 videoconferencing systems costing an average of about $20,000 each. A pilot project involving desktop Web collaboration tools is now under way as well, he added.

Eric Entwistle, an IT infrastructure analyst at Deere & Co. in Moline, Ill., said traffic on a collaboration server at the company spiked 300% on Sept. 11 and the next day. A corporate travel ban was in effect for several days that week, he noted.

Deere uses Microsoft Corp.'s NetMeeting collaboration software for most of its users and similar applications on its Unix systems. Users can perform tasks ranging from chatting to sharing engineering documents stored in computer-aided design systems, Entwistle said.

WorldCom Inc.'s Chicago-based conferencing and collaboration services division last week said it had its busiest day ever on Sept. 13. And Doug Kreitz, vice president of professional services at Texas-based systems integrator Nsync Services Inc., said he's seeing a big increase in user demand for collaboration and application-sharing technology.

Officials at accounting firm Ernst & Young LLP and technology services provider Schlumberger Ltd., both based in New York, said they expect an increased reliance on existing conferencing and collaboration systems as an alternative to travel at their companies.

"We're suggesting phone conferencing or videoconferencing whenever possible," said an Ernst & Young spokesman. ◗

Reporter Jennifer DiSabatino contributed to this article.

How to Get Started

Here are some tips for companies trying videoconferencing for the first time:

- **Consider** hiring a service provider to avoid an internal tech-support burden.
- **Make sure** video feeds won't compete for network bandwidth with other apps.
- **Make sure** videoconferencing systems are secure and private through the use of a virtual private network.
- **Inform** users about conferencing etiquette, such as not shuffling papers or talking over one another, and detail the limits of the technology.
- **Provide** the required video production basics: good lighting and consistent sound quality without echoes.

SOURCE: IT USERS AND GARTNER INC., STAMFORD, CONN.

Staying Grounded

Air travel concerns are boosting virtual meetings:

58% of corporate travel managers say their companies will reduce travel.

88% say they will increase their use of videoconferencing.

SOURCE: NATIONAL BUSINESS TRAVEL ASSOCIATION, ALEXANDRIA, VA., SURVEY OF 57 COMPANIES

Airline Ticketing Systems React to Disaster

Rebookings prompt boosts in capacity

BY JENNIFER DiSABATINO

When thousands of flights were grounded and canceled on Sept. 11, Paul Quade knew that a demand spike for ticketing information on his mainframe was coming.

The senior director of internal business systems at Galileo International Inc. in Rosemont, Ill., quickly switched on extra capacity that day in the reservation system for Chicago-based United Air Lines Inc. and other airlines using the global distribution service (GDS).

The added computing power was turned on "because at that time, we weren't sure when they were going to start flying again," he said.

Each mainframe has up to 10 engines, though not all are running. On Sept. 11, Galileo turned on some of the unused engines, or smaller computers within the mainframes, to increase capacity by 25%.

"It did spike when there was a lot of rebooking going on. It did not spike as high as we thought and has since dropped to expected levels," he said. "The longer [the airport closures] went, people found other ways to get home."

Galileo processes 350 million transactions annually through its reservation system.

Galileo rival Sabre Holdings Corp. in Fort Worth, Texas, also added capacity to its old mainframe GDS through its outsourcer, Electronic Data Systems Corp. in Plano, Texas.

EDS provides services for companies such as Sabre, Fort Worth-based American Airlines Inc. and Houston-based Continental Airlines Inc.

"It's been our clients in the travel business who have needed the most support," in terms of needing to set up and manage crisis centers and special call centers, said EDS spokesman Tom Mattia. As a result, EDS has pulled employees from other areas and put them in data centers dealing with travel clients, he said. Sabre didn't indicate the method it used to increase capacity or the amount of the increase.

Amadeus Global Travel Distribution SA in Madrid didn't add capacity, said spokesman Bill Spears. "Our system has already more than enough flexibility to cope with the peaks and troughs that are occurring in the business right now," Spears said.

In the week following the attacks, Amadeus reported that it had 1.6 million fewer bookings than it did during the same period a year ago. That represents a 28% drop, though in North America, where planes were grounded for three days after the attacks, ticket purchases dropped 74%. North America represents 12% of Amadeus' total annual bookings, according to the company.

"What that doesn't say is what the net, final impact will be on the industry," Spears said. "Those [declines] are bookings that might be booked at a future time." ◗

Preparing for The Traffic Jam

A breakdown of how Galileo boosted capacity in anticipation of rebookings and cancellations following the Sept. 11 attacks:

Total mainframes	20
Mainframes used for reservation systems	6
Engines running on reservation mainframes prior to Sept. 11	32
Engines "turned on" in those mainframes on Sept. 11	8

New York Board of Trade Gets Back to Business

Disaster plan helps exchange recover business within days of terrorist assault

BY CAROL SLIWA
QUEENS, N.Y.

TRADERS waved their arms and barked orders last week for coffee, cocoa, sugar, cotton and orange juice, just as they typically do, from depressed pits at the New York Board of Trade.

But when trading commenced Sept. 17, the action was taking place in a crammed temporary facility located here — seemingly an ocean away from the smoldering rubble where the Board of Trade's headquarters a week earlier bustled in the World Trade Center.

IT staffers had major trading systems up and running within a day thanks to the disaster planning that the Board of Trade did in the aftermath of the 1993 World Trade Center bombing. The company spent $300,000 a year renting space in Queens for a trading floor and its backup Compaq Computer Corp. Himalaya 72000 at a business-recovery facility owned by Rosemont, Ill.-based Comdisco Inc.

"That was a hot topic at the last budget cycle: Why should we continue to spend $300,000 for something we'll never use?" said CEO Mark Fichtel. "That's what insurance is all about. You hate paying the premiums, but you're sure glad you did when you have to collect."

Until the 1993 bombing, the Board of Trade's disaster-recovery facility consisted of a vacant "cold site" in Philadelphia rented from SunGard Data Systems Inc. Cold sites are less costly but must be activated from scratch, using backup tapes, and "you're always running the risk that a tape is bad," said Steven Bass, a senior vice president of IT at the Board of Trade. It also ran the risk of being unable to secure choice space, since relocation facilities generally get filled on a first-come, first-served basis.

CAROL SLIWA

THE NEW YORK BOARD OF TRADE went back to business in a small backup facility in Queens following the Sept. 11 terrorist attacks.

So the Board of Trade elected to invest in a hot site, with the knowledge that it wouldn't lie entirely fallow. The backup Compaq box in Queens served as a development system. And on a quarterly basis, IT staffers descended on the deserted Queens facility to test the disaster plan, much as they might conduct a fire drill. A typical test would run an hour and 45 minutes.

"No one liked to do it," said Ian Nelson, vice president of technical operations. "It always meant coming in on a Saturday and spending a beautiful day here."

Ironically, the quarterly test scheduled for Sept. 8 had been postponed to Sept. 15 due to electrical work being done at 4 World Trade Center. As it turned out, the plan was put into action for real on Sept. 11, and the first challenge was the logistical problem of reaching essential staff.

Patrick Gambero, executive vice president of operations, was nearing the Lincoln Tunnel when two commercial airliners crashed into the World Trade Center towers. Ordered to turn back, he tried to reach staff via telephone from his New Jersey home, only to find overloaded circuits.

Key staff eventually got tracked down via walkie-talkie, and, "when we got lucky, by cell," said Bass, who was bound for Penn Station by train when the disaster hit. He walked to Queens upon touching base with Gambero.

Feelings vs. Rationality

But getting ash-covered employees to focus on restoring systems at a time when they were coping with severe emotional trauma was a tough order. Barry LeGros, vice president of application systems, recalled feeling the heat of the explosion as he fled the World Trade Center area.

"It was terrifying, and then you start to calm down and think rationally, and then it was terrifying again," LeGros remembered. Upon arriving on foot at his mother-in-law's Brooklyn home at around 4 p.m., LeGros found a message from Gambero and later drove to Queens with a co-worker. His walkie-talkie had been left on his desk.

Trades on Tuesday — the day of the attack — got settled that night, and clearings were done Wednesday. IT staffers worked to get software to clearing partners as quickly as they could. By Friday, the Board of Trade was ready for a test run, and on Saturday it did a walk-through with members at the temporary site. On Monday, trading commenced.

But that didn't mean all systems were restored and running at peak performance. The Board of Trade soon learned that no matter how much advance preparation a company does, there are always tasks that have been overlooked or put off in favor of others perceived to be more important.

For instance, various applications that had been running on Windows NT servers weren't backed up. So Board of Trade employees lost contacts in saved e-mail. And office workers may have to reconstruct financial records from outside sources if the backup tapes from the Board of Trade's Great Plains Software Inc. financial system can't be recovered from the 4-by-6-foot fireproof safe that sits amid the rubble in lower Manhattan.

The Board of Trade was in the process of upgrading its backup NT servers at the time of the disaster. The backup machines were in Manhattan, due to be shipped back to Queens on that fateful Tuesday, Bass said.

Last weekend, the Board of Trade planned to add memory to its Compaq Himalaya. Because the Queens machine had half the memory as the Manhattan-based box, the transaction throughput wasn't as strong as staffers wanted it to be, Nelson said.

Fichtel said he hopes the Board of Trade will be in new quarters at the New York Mercantile Exchange within a month, although he conceded that it could take two to four. Whether it takes a month or even a few days, Fichtel said the $300,000 insurance policy was worth it.

"If you're not ready and you are effectively shut down for any length of time," he said, "it is a very competitive world, and people will take your business away from you."

Lessons Learned

After coping with the disaster at the World Trade Center, IT staffers at the New York Board of Trade offered the following advice and tips about disaster-recovery plans:

1. **Make sure that key staffers are equipped with walkie-talkies.** "A cell phone has better range than the walkie-talkie, but the walkie-talkie operates in different frequencies. It didn't get jammed up," said Steven Bell, senior vice president of IT.
2. **Devise plans for both short- and long-term scenarios, and "take both seriously,"** said Bell. "It's very easy to wave your hand and say, 'We'll think about it later,' " he said. "Changing things in the heat of the situation can be dangerous. You're tired. You're not thinking as clearly."
3. **Test your disaster plan on a regular basis.** "You never take fire drills seriously until you've been involved in a fire," said Ian Nelson, vice president of technology operations.
4. **Assess all your interfaces with other companies.** Encourage business partners to test their backup systems and participate in disaster recovery tests. "This will save you a lot of time," said Barry LeGros, vice president of application systems.
5. **Make sure that disaster recovery is included in the planning of every project.**

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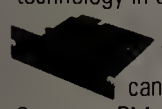

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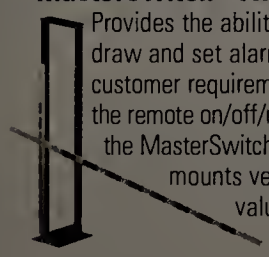

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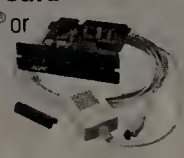

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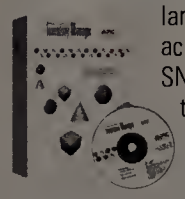

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War Against Terrorism Raises IT Security Stakes

Concerns heightened that cyberattacks and physical attacks will be combined

BY PATRICK THIBODEAU
WASHINGTON

A WAR against terrorism raises the specter of increased security risks for information managers — risks ranging from nuisance Web site defacements to the possibility that systems could be targeted in conjunction with a physical attack as part of an effort to maximize disruptions.

Such threats existed before the Sept. 11 terrorist attacks against the U.S. But the possibility of a significant attack — specifically, a combined cyber and physical assault — is being taken much more seriously since those events.

What security experts and managers are less certain of is the degree of risk. Most said they believe the war against terrorism will raise the danger level, but some security managers said they were already under siege.

"I think we already had a very significant threat prior to Sept. 11," said Steve Akridge, chief security officer for the Georgia Technology Authority, which manages the state's IT.

"On a scale of 1 to 10, we felt that the threat was an 8. Maybe now it's a 9," said Akridge.

The biggest change wrought by the terrorist attacks may be improved awareness of the importance of information security — especially contingency planning.

"Even though it wasn't a computer-related attack, the mind-set now is that we are no longer immune from this type of incident," said Larry Seibel, information security director at the Huntington National Bank in Columbus, Ohio. "The incident, without a doubt, has served to raise the level of importance of contingency planning for business and systems recovery."

The major concern is, of course, physical attacks. But a U.S. congressional commission examining weapons of mass destruction used by terrorists concluded that cyberattacks in concert with physical attacks are a major concern.

"There has been substantial concern [about] the potential consequences of cyberattacks," said Virginia Gov. James Gilmore, the Republican chairman of the congressional commission. "Communications, if disrupted, could have significant impact on the [physical] attack itself, and we have been very focused on that and very concerned about that particular issue."

Although the number of nuisance attacks may rise, of more concern are attacks of greater intensity. "I am less concerned with an increase in frequency than I am concerned with an increase in ferocity," said G. Mark Hardy, a security expert at Ernst & Young International in New York.

Tim Atkin, a member of the private-sector group Partnership for Critical Infrastructure Security and director of critical infrastructure protection at consulting firm SRA International Inc. in Fairfax, Va., said a cyberattack is "a completely viable option" for a terrorist group to inflict great damage on the U.S. "Right now, the view is [that] nothing should be considered sacred," said Atkin. "You never know where an organization like [Osama bin Laden's al-Qaeda] is going to hit." ◗

Reporter Dan Verton contributed to this article.

AT&T Wireless Says It Can Meet FCC Location Mandate

Service aided in search for attack victims

BY BOB BREWIN

AT&T Wireless Services Inc. last week confirmed that it can meet the Federal Communications Commission's Enhanced 911 automatic location identification requirements, reversing the position it took when it sought a waiver in April from the Oct. 1 deadline by which carriers must offer the service.

Emergency crews searching for victims at the site of the Word Trade Center terrorist attack in New York have been using jury-rigged location systems to locate cell phones and potentially their owners, providing real-world impetus to the cell phone industry's efforts to meet the FCC's E911 location deadlines, analysts said.

Steve Crosby, a spokesman for AT&T Wireless, said that although the company had been working on development of a location system that would provide enhanced accuracy, it couldn't meet the FCC's deadlines. Crosby said that in the end, AT&T Wireless decided it would be better to meet the deadline with a system that was as close as possible to the system it had originally planned than to push to complete the original system and miss the deadline.

In its latest filing with the FCC, Redmond, Wash.-based AT&T Wireless said it plans to use network-based location systems provided by either TruePosition Inc. in King of Prussia, Pa., or Forest, Va.-based Grayson Wireless, a division of Allen Telecom Inc. in Beechwood, Ohio.

Michael Amarosa, a spokesman for TruePosition who once served as deputy commissioner for communications for the New York City Police Department, said his company worked with Verizon Wireless to deploy a jury-rigged version of its position-locating system in lower Manhattan. That makeshift operation, which included "hanging antennas out of broken windows" of buildings near the World Trade Center rubble, was aimed at finding cell phones of victims buried in the collapse of the twin towers.

Amarosa said the ad hoc system, which he described as a rough version of the system TruePosition will install nationwide in the AT&T Wireless network, managed to find 1,600 cell phones in or near the rubble pile, with an accuracy of within 100 meters.

Alan Reiter, an analyst at Wireless Internet & Mobile Computing in Chevy Chase, Md., said he found it "not coincidental" that AT&T Wireless reversed course on the FCC's location mandate just after the terrorist attacks. ◗

AT A GLANCE

Locaters

- **The FCC has mandated that all cell carriers offer automatic E911 location service as of Oct. 1. Only AT&T Wireless and Cingular Wireless have said they can even come close to meeting that deadline.**
- **AT&T and Cingular will both use sophisticated triangulation from nearby cell towers to provide location determination to within 100 meters 67% of the time.**

Code-Breakers No More

WASHINGTON

U.S. fighting forces during World War II were greatly aided by the government's ability to crack enemy codes. But that ability has been largely defeated by much-improved encryption technology, and decisions by U.S. officials and Congress to liberalize encryption policy are coming back to haunt them.

There's an emerging push in Congress to find a way to give the government access to a software manufacturer's cryptographic keys to conduct a legal search and seizure.

"If we can't intercept conversations that are happening over the deserts of Afghanistan because of some basic encryption software, then we're definitely one hand tied behind our back," said Brian Hart, a spokesman for Sen. Judd Gregg (R-N.H.), who has emerged as the leading critic of U.S. encryption policy.

But Thomas Crocker, a member of the President's Export Council Subcommittee on Encryption, said, "[The] difficulty is that there is strong encryption available worldwide, and not just from the United States and Europe.

"There are other major suppliers, including Russia, Israel, South Africa, India and other countries. Therefore, the genie is out of the bottle," he said.

Crocker, an attorney at Alston & Bird LLP in Washington, said an international agreement would be needed to control encryption.

Former FBI Director Louis Freeh warned Congress two years ago that encryption "potentially has catastrophic implications for our ability to combat every threat to national security."

– *Patrick Thibodeau*

Security Experts Say Antiterror Information Tools Flawed

Biometric, authentication technologies may see broader use

BY DAN VERTON
WASHINGTON

False visas, forged passports and identification documents, and the ability to slip into the country before the CIA's watch list of suspected terrorists could be shared with the FBI and border patrol agents: These are just a few of the factors that enabled terrorists to enter the U.S., board commercial airliners and crash them into the World Trade Center, the Pentagon and rural Pennsylvania, killing thousands.

And now the events leading up to the Sept. 11 tragedy have led experts to call for massive upgrades and improvements in the way border-crossing security data is handled in the U.S.

Attorney General John Ashcroft has issued a legislative proposal to pass new wiretap laws that would allow federal law enforcement officials to obtain wiretaps that target individuals instead of the hardware they use to communicate, as is called for under current law. Meanwhile, other security experts are calling for a dramatic change in the systems used to share intelligence information and authenticate the identities of individuals entering and leaving the country.

Virginia Gov. James Gilmore, a Republican, heads a special commission of experts that's looking into ways the U.S. government can improve its ability to track suspected and known terrorists and respond to incidents. Gilmore's commission, which has issued two reports so far, is speeding up the release of its third and final report, which will include specific recommendations on information-sharing and border security.

"We need to have an intelligence dissemination capability," said Gilmore. "We don't have that today."

Currently, there are at least a half-dozen database systems used to help authorities weed out known or suspected terrorists and criminals at border crossings and airports, as well as a visa and passport system that does not yet take advantage of advanced authentication technologies such as biometrics. That's the conclusion of a report issued in June by the Congressional Research Service (CRS).

"With new technologies, a traveler's identity could be quickly and definitively verified by matching their identity with biometric identifiers like facial geometry, iris scans and fingerprints that could be incorporated into passports, visas, and other travel documents," states the report.

The problem of monitoring and tracking border crossings is monumental. This year, the State Department plans to process more than 7.5 million nonimmigrant visa applications, about 500,000 immigrant visa applications and more than 7.8 million passports, according to the report. In addition, of the 250,00 foreign students who enter the U.S. every year, about 1,000 are from states that support terrorism, said L. Paul Bremmer, former director of the State Department's counterterrorism bureau. "[Immigration and Naturalization Service] database enhancements are needed," he said last week.

However, once foreign nationals are admitted to the U.S., they aren't monitored unless they do something illegal or raise suspicions that they may be involved in terrorist activities. In addition, not all persons who are in the Consular Lookout and Support System used to identify dangerous people are denied visas, according to the CRS report. For example, a suspected or confirmed terrorist may be granted a visa denial waiver for political or intelligence-gathering purposes, the report states.

"One of the fundamental pillars here is strong authentication," said Brian O'Higgins, chief technology officer at Entrust Inc., an Internet security firm in Plano, Texas. The sort of technology required for greater border security and sharing of information is on the horizon in the private sector, he said.

O'Higgins said he can imagine fingerprint technology being incorporated into cell phones, airplane controls and biometric kiosks at border crossing points that automatically authenticate a person's identity with little or no chance of being wrong.

IT Operations Damaged in Pentagon Attack; Equipment on Emergency Order

Top-secret naval operations likely destroyed in wreck

BY DAN VERTON
WASHINGTON

The Pentagon has placed an emergency order for desktop and workstation security equipment in the wake of the Sept. 11 terrorist attack that destroyed several of its classified communications and technical help desk centers.

U.S. Department of Defense officials have ordered more than 1,000 proprietary Secured Desktop Gateway communication enclosures for immediate delivery from Carlsbad, Calif.-based Holocom Networks. The Pentagon requested urgent delivery of the company's products to help ensure the security of information at Pentagon workstations that have been temporarily set up in unclassified office locations.

The company's secured communications enclosures will be installed at desktops that are being set up in makeshift, sensitive, compartmented information facilities. Secured by lock and key, the Secured Desktop Gateways will allow users to maintain access to classified networks while working in temporary office facilities, said Robert Murphy, a furniture and facilities connectivity specialist at Holocom.

Defense Department officials and sources said the areas damaged in the attack include the U.S. Navy's Telecommunications Operations Center, sensitive chief-of-naval-operations offices, and help desk operations within the U.S. Army's Information Management Support Center.

Navy Adm. Vern Clark, chief of naval operations, acknowledged that the Navy Telecommunications Operations Center was located near the impact area but said it wasn't fully destroyed.

THE ASSOCIATED PRESS

THE SEPT. 11 TERRORIST ATTACK on the Pentagon has the Department of Defense scrambling to replace critical network equipment.

"We have re-established our operations center, and it is functioning," said Clark.

Margaret Myers, the Defense Department's deputy CIO, declined to discuss what she called "operational responses to the current crisis."

However, a former Navy intelligence officer who spoke on condition of anonymity said the location of the crash almost certainly caused damage to many top-secret network operations within the Department of the Navy. But, the former officer said, it's likely the attack had little or no impact on the Navy's ability to communicate intelligence or orders to Navy vessels.

One of the main areas where Murphy began working last week was slated to become the new Army Enterprise Help Desk. The help desk will provide round-the-clock support for more than 7,000 Army computer users in the Washington area.

"These people have to be at their desks working on their systems right now," said Murphy, who was busy installing the prototype systems for the Army and was nearly killed when the plane crashed into the Pentagon. "My safety shoes are in that room, and I'm really glad that I'm not in them."

BRIEFS

Intel Changes Xeon Chip Upgrade Plans

Intel Corp. said it's dropping plans to ship a 2-GHz version of its Xeon processor for two-CPU servers in the fourth quarter and will instead speed up the delivery of a faster chip that's now due early next year. That device is being built with more advanced manufacturing process technology and is expected to run at 2.2 GHz.

3Com Plans More Cuts

3Com Corp. reported a $232 million net loss for its first quarter, which ended Aug. 31, as revenue fell from the year-earlier level of $933.8 million to $389.6 million. 3Com also disclosed plans to cut another 1,000 jobs, which will leave the Santa Clara, Calif.-based networking vendor with about 6,000 employees – half the number it had last November.

Palm Reports Loss, Lowers Forecast

Handheld computer maker Palm Inc. has sharply cut its revenue projections for the fiscal quarter that started this month and said it now expects to report another operating loss. Santa Clara, Calif.-based Palm also reported a net loss of $32.4 million for its first quarter, ended Aug. 31, on revenue of $214.3 million, down 47% from the year-earlier revenue figure.

New Spec Aimed at Systems Management

Fairfax, Va.-based integration software vendor webMethods Inc. announced a specification, co-written by Hewlett-Packard Co., that's meant to let systems management applications pull more data from the machines they're monitoring. Also pledging support were HP rivals Computer Associates International Inc., BMC Software Inc. and IBM subsidiary Tivoli Systems Inc.

Microsoft: Remedies Are As 'Radical' as Breakup

Hearings could be complex, protracted

BY PATRICK THIBODEAU
WASHINGTON

THE NEXT PHASE of the Microsoft antitrust case — deciding what remedies to impose on the software giant — has the potential of being as protracted and complex as the initial trial.

A status report jointly prepared by the government and Microsoft Corp. was filed in U.S. District Court last week. It calls for as many as 10 witnesses on each side and cites new documentary evidence on events in the PC industry since the trial. The remedy hearings are expected to be, in some respects, a replay of the initial trial.

"This essentially constitutes another trial just slightly pared down from the initial one," said Hillard Sterling, an antitrust expert at Gordon & Glickson LLC in Chicago. "These remedy hearings are as complex as the overall trial on liability."

But both sides also acknowledged in the court papers that settlement talks are ongoing. Microsoft is "working to resolve this case short of further litigation," said Jim Desler, a company spokesman.

Although the report was jointly filed, it outlined the two sides' disagreements. The government wants to move swiftly, with hearings beginning in February. Microsoft wants a more complex, detailed process, which the government said would delay the case "well into 2002." Judge Colleen Kollar-Kotelly will hold a hearing this Friday on these issues.

If Kollar-Kotelly agrees with the government, it's possible that remedies could be imposed on Microsoft sometime next spring. The company would likely appeal and seek a stay of the remedies, but the judge could reject that request, citing this past summer's unanimous Court of Appeals decision that Microsoft illegally used anticompetitive means to maintain a monopoly.

There is the possibility of an appeal to the Supreme Court, but at least one company critic maintains that the decision by the U.S. Department of Justice not to seek a breakup makes it unlikely that the high court will have much interest in the case. "Without a breakup being part of it, I don't see the Supreme Court touching it," said Ed Black, president of the Computer & Communications Industry Association in Washington.

The government plans to model its remedy proposal after a series of business restrictions proposed by lower court Judge Thomas Penfield Jackson, who called for a ban on "adverse actions" by the company against PC makers that support competing products. The proposed remedies also called for uniform Windows pricing and licensing terms, flexibility for PC makers to configure the desktop and other measures. The government, however, said it could seek additional remedies.

Microsoft, in arguing for a longer remedy phase, said Jackson's proposed remedies "are every bit as radical as the now-discarded proposal to break up the company." Earlier this month, the government dropped its plans to seek a breakup of Microsoft. Justice Department officials argued that doing so would remove a perhaps impossible objective from the table, in favor of remedies aimed at curbing the firm's anticompetitive practices. ◗

AT A GLANCE

Next Steps

Government: Wants new remedy phase hearings to begin in February.

Microsoft: Wants a far more detailed process; the government contends that this would extend the case to late next year.

Remedy outlook: Judge could impose remedies at the end of this process and reject company's expected request for a stay. That means Microsoft could be facing mandated court changes by next spring.

Microsoft to Open Passport for Competitors

BY MATT BERGER

Bending under the weight of mounting legal and industry criticism, Microsoft Corp. said last week that it will alter its Passport authentication system to interoperate with similar services from competing companies.

Brian Arbogast, a vice president at Microsoft, said interoperability will be added to Passport next year. Microsoft also said it will work with companies to enable their authentication systems to work with Passport. For instance, employees could sign on to internal sites such as those that manage employee benefits.

"It's a way for enterprises to authenticate their users and have them trusted beyond the scope of just their business," he said. "We never thought of outsourcing Passport previously, but there is tremendous market opportunity."

To allow the single sign-on service to work with competing services from rivals such as New York-based AOL Time Warner Inc. and proprietary systems used by corporations, Microsoft said it will include support for a technology called Kerberos in Passport.

Chris Le Tocq, an analyst at Los Altos, Calif.-based Guernsey Research, said winning the support of Microsoft's biggest rivals, such as AOL Time Warner, may be a stretch. "AOL is going to have to be pushed real hard to sign on to this," he said.

AOL has said it's working on its own single sign-on service based on technology used in the authentication system for its America Online Internet service. It's also a strong opponent of Microsoft and has a history of being slow to open up its own systems, such as its instant messaging services, to competitors. AOL is currently under order by federal regulators to make its instant messaging systems work with rival services.

The open-source community is also working on developing a single sign-on authentication system, and Sun Microsystems Inc. has said that it, too, could build a sign-on service that would compete with Passport.

For its part, Microsoft said opening up Passport would give rivals and corporate partners control over many aspects of their own authentication systems. The company also said it will consider allowing a neutral third-party group or a federation of companies that includes itself and industry rivals to oversee Passport.

"What the federation approach does is provide the capability, through Passport, to make a single administration point for internal and external sites," Le Tocq said. ◗

Glossary

Passport: Microsoft service that lets users visit other Web sites and access password-protected services, such as instant messaging and online banking, with a single sign-on.

Kerberos: A network authentication protocol developed by MIT researchers that allows one computer to prove its identity to another across an insecure network through an exchange of encrypted messages.

Berger writes for the IDG News Service.

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BRIEFS

Sun Goes Ahead With Server Launch

Sun Microsystems Inc. said it will proceed with a planned product announcement this week in New York, at which the company is expected to announce a high-end server based on its UltraSPARC III chip. The launch will round out Sun's hardware line with that processor, which now is available only in workstations and lower-end servers.

Lucent Ends Work on High-end ATM Switch

Beleaguered Lucent Technologies Inc. said it has stopped development of a high-end ATM switch that was detailed in June for use in converged voice, video, and data networks. The promised MSC 25000 switch was discontinued as part of a product review stemming from the company's ongoing corporate restructuring, said Murray Hill, N.J.-based Lucent.

Software Vendor Cognos Back in Black

Ottawa-based data analysis software vendor Cognos Inc. returned to profitability, reporting net income of $7.1 million (U.S.) in its second quarter, ended Aug. 31. However, that figure was down from a year-earlier profit of $16.5 million. Revenue dropped slightly from $118.2 million in the second quarter of last year to $116.3 million.

EMC Pays $50M for Performance Vendor

Hopkinton, Mass.-based EMC Corp. announced that it had bought Luminate Software Corp., a Redwood City, Calif.-based maker of performance-monitoring tools, for about $50 million in cash. Luminate's products can be used to track and analyze the performance of storage-intensive applications and of SAP AG's R/3 suite of business software.

Continued from page 1

Nimda

Microsoft Corp.'s Windows 95, 98, ME, NT and 2000.

Unlike other worms and viruses, Nimda is capable of spreading via both network-based e-mail and Web browsers. It was also written to scan for and exploit back doors left behind by previous viruses such as Code Red and Sadmind.

"The newness of this is that it leverages a number of different vulnerabilities in order to propagate itself," said Allen Householder, an analyst at the CERT Coordination Center at Carnegie Mellon University in Pittsburgh.

Nimda propagates via various means, including modifying Web content on vulnerable systems running Microsoft's Internet Information Server software, Householder said.

In the process, Nimda last week clogged part of the Internet, slowing down or even stopping Web traffic for some users. Many sites also experienced high volumes of e-mail and network traffic as a result of the worm, according to a joint statement from CERT, the SANS Institute in Bethesda, Md., and the Information Technology Association of America in Arlington, Va.

In a four-hour period starting at approximately 8 a.m. CDT Tuesday, the University of Chicago's Web servers were scanned by almost 7,000 unique IP addresses looking for vulnerabilities to exploit, said Larry Lidz, a senior network security officer at the school.

As a result of the attacks, about 20 university servers were infected with the Nimda worm and had to be disconnected from the network, Lidz said. He recommended to school officials that those systems be reformatted and all software reinstalled.

"If somebody has used a back door left by worms such as Code Red to infect your systems, you never really know what they have done to the system," Lidz said.

Insidious Worm

Much of the standard antivirus software that was available at the time the worm struck failed to keep Nimda from spreading, users and analysts said.

The worm does a number of insidious things, such as modifying critical system files and registry keys, making every directory available as a file share and creating a guest account with administrator privileges, said Russ Cooper, an analyst at TruSecure Corp., a Reston, Va.-based security firm.

"These characteristics make it incredibly difficult to clean the worm from an infected system," according to a SANS advisory.

"Running [antivirus software] alone will not fix the problem," said Edward York, chief technical officer at 724 Inc., an application hosting service in Lompoc, Calif.

"The server must be secured all over again, all open shares closed, the Hot Fixes reapplied, the guest account disabled again and all traces of any file called root.exe or admin.dll deleted from the system." York said. Administrators also need to ensure that any registry items added by Nimda have been removed, he said.

Until more sophisticated fixes become available, the only sure course is to disconnect infected systems from the network, reformat their hard drives, reinstall software from a clean source and apply the appropriate security patches, according to recommendations issued by CERT and SANS.

Analysts: Ask ISPs for DOS Protection

In the wake of the Sept. 11 terrorist attacks, Gartner Inc. is advising users to ask their Internet service providers for contractual denial-of-service protection.

Such protection could end up costing corporations more but is worth the expense, in light of the heightened threat of such attacks, said John Pescatore, an analyst at Stamford, Conn.-based Gartner.

Denial-of-service attacks make computer systems inaccessible by overloading servers or networks with useless traffic so that legitimate users can no longer gain access to those resources. Security analysts expect such attacks to be a preferred weapon of cyberterrorists.

"If revenue-producing or other business-critical operations depend on Internet connectivity, enterprises should begin budgeting for contractual denial-of-service protection from their Internet service providers or Internet data centers," said Pescatore.

The advice comes at a time when a slew of vendors have begun offering tools that they claim will help corporations protect against denial-of-service attacks. The vendors include Cambridge, Mass.-based start-up Mazu Networks Inc.; Waltham, Mass.-based Arbor Networks Inc.; Seattle-based Asta Networks Inc.; and Woodland, Calif.-based Captus Networks Inc.

Tools from such vendors do a good job of helping companies detect a denial-of-service attack and mitigate its effects, Pescatore said.

But instead of installing such technologies on enterprise networks, which is where most of the effort has been so far, it's more effective for users to get their Internet providers to offer it as a service, he said.

"If I get hit with a [denial-of-service] attack that fills up my Internet pipe, I'm dead," Pescatore said. "So the [denial-of-service] prevention needs to be further upstream in the Internet data center or ISP."

Most enterprises also aren't fully aware of all of the emerging denial-of-service products available and how to evaluate or manage them, said Zeus Karavella, an analyst at The Yankee Group in Boston. "That's why I think it's even more important for them to have the [protection] by a service provider," Karavella said.

– *Jaikumar Vijayan*

EMC Warns of Loss, Layoffs

BY DOUGLAS F. GRAY

Citing continued IT spending cutbacks by its users, storage vendor EMC Corp. last week warned that it expects to report a third-quarter loss and announced plans to lay off another 2,400 employees.

Joe Tucci, EMC's president and CEO, said in a statement that the Hopkinton, Mass.-based company is "highly unlikely" to break even during the third quarter. To match its projected expenses, he said, EMC would need $1.8 billion in revenue — a level the company no longer thinks it can reach.

Financial analysts polled by Boston-based Thomson Financial/First Call had previously predicted that EMC would post a small third-quarter profit. In last year's third quarter, the company reported net income of $458 million on revenue of $2.28 billion. But this will be its third straight quarter of lower-than-expected sales.

"The current economic environment for technology expenditures is worsening globally," Tucci said. "It is now clear that further weakening of the economy is causing major cutbacks in many of the industries served by EMC. The business world is simply covered in a blanket of hesitation."

The planned cutbacks are scheduled to be completed by year's end and will reduce EMC's 23,400-person workforce by about 10%. They follow an earlier round of layoffs last spring, when the company cut about 1,100 workers.

Along with the new job cuts, Tucci said, EMC will make "sweeping" cost-cutting moves in other areas such as real estate and product inventories.

Gray is a reporter for the IDG News Service.

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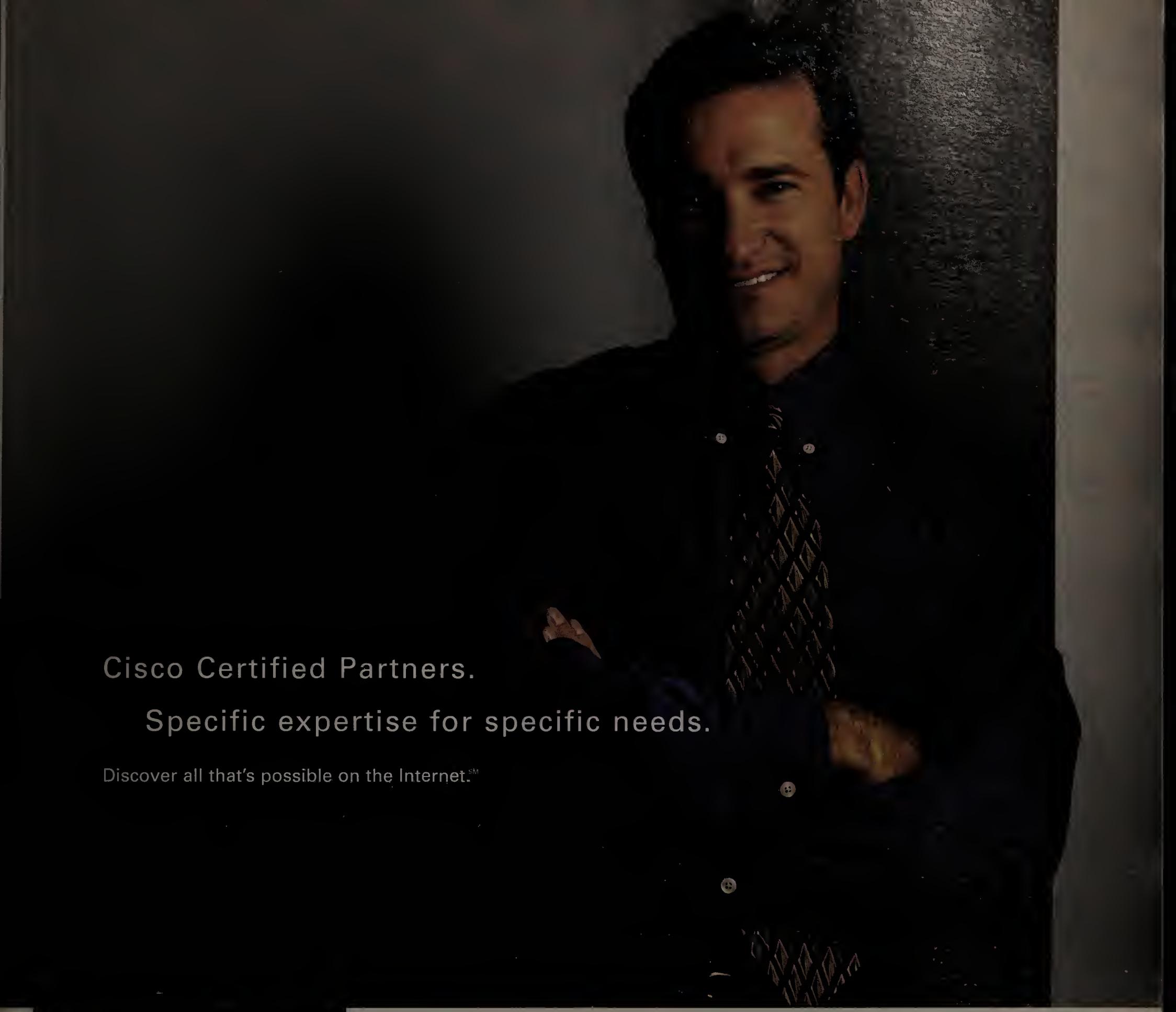

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Computer Associates Retools, Touts Open-Door Philosophy

Cautious users laud changes in approach, policies but say CA still has a lot to prove

BY MARC L. SONGINI

THE COMPUTER Associates of old rolled through the IT landscape, buying up troubled companies, killing off products, jacking up prices and laying off thousands. In the process, the ever-expanding vendor inherited an often hostile user base — some of whom vowed to dump the company at the first opportunity, or wished that they could.

Fast-forward to 2001. A newly retooled CA has turned its focus inward, launching new logo, branding and marketing efforts. The sprawling company has restructured itself into more manageable parts, beefed up internal product development and, most unexpected of all, improved support and built better relationships with its highly critical customers. The jury is still out, but conversations with a cross section of CA's user base indicate that a hopeful, if cautious, détente is under way.

How CA and its new president, Sanjay Kumar, handle the next stage of this relationship will determine how one of the world's top suppliers of packaged software will weather the current economic storm and ensure its own future.

The company is under attack for adopting an accounting method that critics say hides losses, and it was forced by the courts last year to revoke 4.5 million shares of stock in executive compensation.

It also needs to grow its customer base. To do that, CA must woo new customers, and in turn, it must accept that perception is reality and prove to users that it has turned over a new leaf in several critical areas.

PROFILE

For now, it's difficult to find user consensus on CA. Even though the company won high marks from attendees at the recent CA World expo, several users participating in *Computerworld* interviews and forums insisted that CA's products are still too pricey and require too many patches and said that support is still inadequate.

Conversely, more than 20 users interviewed by *Computerworld* in recent weeks have credited CA with substantially cleaning up its act in the area of service and support, which has long been the focus of bitter complaints and is an area that company critic and investor Sam Wyly has targeted as one of the vendor's weaker points.

However, these CA users specifically cited a greater willingness on CA's part to listen to and act upon their concerns, which they say has resulted in more bug fixes and better product development, as well as recent changes in some pricing schemes and an effort to make contract negotiations less adversarial.

COMPANY SNAPSHOT

Name: Computer Associates International Inc.

Location: Islandia, N.Y.

Revenue for FY 2001: $4.198B

Founder and chairman: Charles Wang

CEO and president: Sanjay Kumar

Employees: 18,200

Primary business: Sales of enterprise, mainframe and storage management software and security and business applications. CA is one of the top software companies in the world, after Microsoft and IBM, and sells more than 1,200 products.

SOURCE: HOOVER'S INC., AUSTIN, TEXAS; CA

CA executives emphasized that they are listening. "If you look at our initiatives, whether it's from the technology or business side, one thing we do is we learn, and we listen to our customers very carefully," said company Chairman Charles Wang. According to GuideStar Communications Inc., a private polling firm in New York hired by CA, customer satisfaction has grown successively over the past three years, Wang said.

It helps that Kumar and Wang, his mentor, have been meeting regularly with users. In an interview, Kumar said he spends 70% of his time in front of customers.

"We took some drastic kind of moves, all in direct reaction to what our customers have demanded," said Wang.

One response to those visits has been the creation of the Customer Relationship Organization (CRO), an outside support group that is separate from the sales force and is charged with overseeing and responding to clients' needs. Among other programs, the CRO offers online services so users can readjust and address their contracts on the fly. CRO personnel are compensated based not on sales but on customer satisfaction levels, Wang noted.

At CA's user conference this summer, Kumar "got the message that a lot of customers aren't happy with the support they've been getting," said Jerry Wetherington, a senior design specialist at the Northeast Regional Data Center for Florida's state university system, and president of the Florida Unicenter User Group. Kumar is working with Wetherington and other user-group presidents to sponsor a task force "that will address some of these problems," Wetherington said.

"There's a greater openness and willingness to change the way they do business [at CA]," said Mark Hardison, president of the Chicago-based Acacia North American User Group, whose members use CA's supply chain and enterprise resource planning products. But, he added, it's "not all peaches and cream."

Users in his group are most pessimistic about CA's product development, Hardison said, but he added that CA is taking steps to evolve its products.

CA is listening, agreed Sherry Irwin, an IT consultant and founder of the Canadian Software Asset Management Users' Group in Ontario. "[But] I'm not convinced yet they are responding," she added. For instance, she said, some CA salespeople still rely on a hardball "take-it-or-leave-it" approach when negotiating terms of con-

How CA Rates With Customers

According to a CA-commissioned poll conducted by GuideStar Communications for 2001 that drew from 2,204 respondents:

75% of CA customers said they have a "positive working relationship" with the company.

93% said CA software was "important" to "mission-critical" in running their businesses.

67% rated CA's service performance as equal to or better than competitors'.

72% said they were "satisfied" to "very satisfied" with the quality of CA's products.

78% rated CA's service as "average" to "excellent."

CA: Listening to Customers Is Key

Computerworld's Marc L. Songini and Patricia Keefe sat down recently with Computer Associates founder and Chairman **Charles Wang** *and President* **Sanjay Kumar** *to talk about service and support.*

How do you respond to charges that CA isn't taking care of its customers?

Wang: If you look at our initiatives, whether it's from the technology or business side, one thing we do is we learn, and we listen to our customers very carefully. We took some bold moves in terms of the new business model; we have modularized Unicenter. All these things are in direct reaction to what our customers have demanded.

What are you doing about service and support?

Kumar: Support for us is kind of taking care of problem issues and those kinds of things. There, I think our numbers are very good. We have electronic records of every support call a customer makes, how long it takes us to answer the telephone, when we first contacted them, whether we solved it, whether we had repeat failures. We also have quarterly customer feedback [sessions] called 360 reviews. . . . That area is terrific.

Professional services has had its ups and downs. We wanted to move into the professional service business with Computer Sciences. If we had done that deal, it would have . . . reshaped the industry once and for all. It didn't work out. We [have since] moved to add some critical mass, because customers were asking us to do many more implementations.

Do you meet customers yourselves?

Kumar: I spend 70% of my time in front of customers. It's the No. 1 thing I do.

Quick Link To read the full text of this interview, visit our Web site.
www.computerworld.com/q?23514

tracts, and the relationship with some accounts is still "adversarial." It can take the form of writing "very subtle things" into contracts that may not have an impact for years down the line, she said.

Nagging Issues

Capacity-based pricing on mainframes (see story on page 22) and support issues continue to gnaw at users. In the latter area, however, CA executives say they have made some significant strides.

For those users who criticize CA's responsiveness, Kumar says response-time numbers "are very good." He added: "We have electronic records of every support call a customer makes, how long it takes us to answer the telephone, when we first contacted them, whether we solved it, whether we had repeat failures. We also have quarterly customer feedback [sessions] called 360 reviews. . . . and we sit there and do a complete 360 review with the customer: Here were the problems; here's what we did with all these kinds of things. That area is terrific." He also noted that CA hired 880 more people to work in the field this year than last year.

Some customers also said they're either unclear on product direction or aren't sure how CA's products will fit into their companies. CA's concept of managing business processes with IT tools is ahead of its time, but the company hasn't figured out how make the benefits clear to end users, said Andrew Winer, CIO at Myers Industries Inc., an Akron, Ohio-based maker of plastic and rubber products.

"CEOs don't think technology can [manage business processes]," he explained.

Within CA, the company has been doing right by customers, said Valerie O'Connell, an analyst at Boston-based Aberdeen Group Inc., but "they are flat-out rotten at letting the world know what they're doing."

Breakdown of CA Revenue Streams

For fiscal 2001 (pro forma):

TYPE OF OFFERING	REVENUE	PERCENTAGE
OS/390	$2.7B	49%
Distributed computing	$2.2B	41%
Services	$517M	9%
Other	$42M	1%
REVENUE BY PRODUCT CATEGORY		
Storage	$875M	16%
Security	$615M	11%
Network management	$800M	14%
Enterprise management	$2.45B	44%
Applications	$263M	5%

SOURCE: COMPUTER ASSOCIATES INTERNATIONAL INC., ISLANDIA, N.Y.

Kumar acknowledged that CA "could always do better" communicating.

Overall, analysts said they believe CA is headed in the right direction, although the size of the company makes generalizations difficult, if not impossible. They point to the modularization of Unicenter, as well as more flexible pricing schemes and a significant bolstering of the IT support organization, as attempts to address past issues. Even the most critical analyst said CA is about even with competitors in terms of development of its flagship Unicenter management software.

"A new logo ain't going to do anything to change the people, company or culture," conceded Kumar. Rather, "the fundamental company and the products and the people and those kinds of things are going to continue evolving the way the customers want," he vowed.

"There is still a long road ahead before they can say they are the superior software company they would like to be," said Bob Schwartz, an IT consultant at SuperValu Inc., an Eden Prairie, Minn.-based food retailer that uses CA's AutoSys fault-tolerance software. "But they are truly headed in the right direction."

CA customers may find the ride a little bumpy, but most seem to agree that the destination is worth it. ◗

Reporter Sami Lais contributed to this article.

CA Adds Modules, Eases Pricing to Keep Grip on Enterprise Management Market

Changes help speed new deployments

BY SAMI LAIS

After a decade of domination, Computer Associates International Inc. has dumped its old enterprise management framework for a nimbler architecture. And with vocal and critical IT managers pointing the way, the company has also adopted a more flexible pricing model.

CA users can save money and time by avoiding a framework deployment and instead trying a single software package for three months. Among other things, this setup also pressures CA to deliver a return on investment fast.

What won't change for IT managers is the constant grappling with the flow of new management software into their systems. In fact, they had better brace themselves for a flood, if market figures reported by IDC are correct.

Demand for the software that manages enterprise IT systems (excluding network infrastructure) last year pushed sales in that market to $13.8 billion, a figure that will almost double in the next three and a half years to $24.9 billion, according to a report from Framingham, Mass.-based IDC.

To protect its market lead, CA introduced a variable-term, server-based pricing structure late last year. That was a "welcome change," said Jerry Wetherington, a senior design specialist at the Northeast Regional Data Center for Florida's state university system. "The old CPU-based pricing was a nightmare to manage and, to my way of thinking, was really anticustomer."

But new users will likely benefit most from the pricing model, said Karl Jackson, Unicenter implementation specialist at Brigham Young University in Provo, Utah. "They can see on a trial basis if it's a product they can use. Then, if they decide they want it, they can lock into a three-year contract. It also forces [CA] to get it up and running within a specified amount of time," he explained.

Lengthy implementation time has long been a stumbling block for companies considering enterprise framework software. After 18 months, 70% of framework deployments fail to achieve their projected ROI, according to a report from Gartner Inc. in Stamford, Conn.

Earlier versions of Unicenter called for deployment of the framework software to all devices. That was an expensive proposition, but necessary for users who wanted to add functions such as asset management or software distribution.

By building its integration into stand-alone applications, Unicenter 3.0 lets managers buy only the management software they need. Houston-based BMC Software Inc. is adopting a similar scheme with this year's release of its Patrol 7.0 system management software.

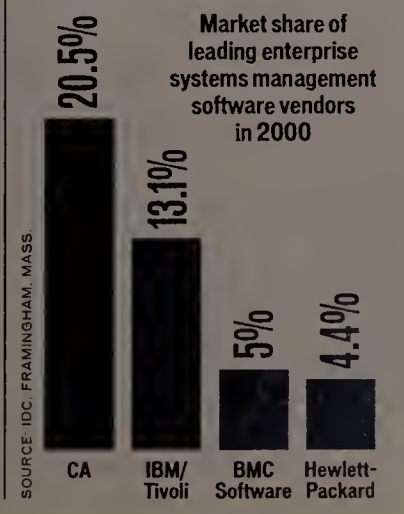
The new pricing model is fine, but it is Unicenter 3.0's flexibility, in addition to the integration of its components, that's key, said Dennis Drogseth, an analyst at Enterprise Management Associates Inc. in Boulder, Colo. "It's not like people want point solutions," he said. "They want flexibility in what they deploy and the ability to evolve it."

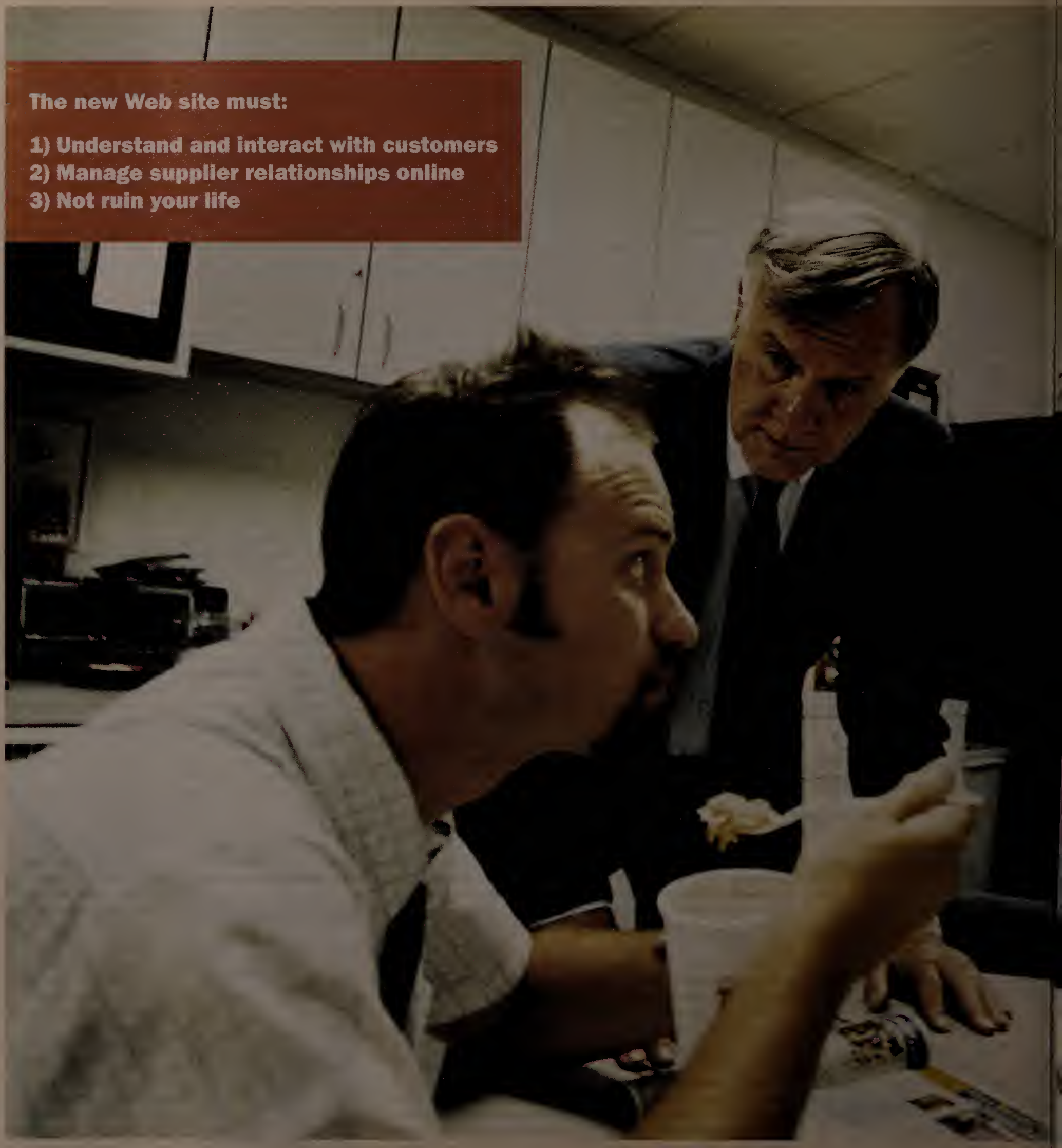
By breaking up "the leviathan, it lets you implement pieces as you're ready. You can reduce the time it takes to have a deployment demonstrate benefit," said Michael Dortch, an analyst at Robert Frances Group Inc. in San Francisco.

With CA's summer release of the newly componentized Unicenter 3.0, the lone remaining enterprise management framework is IBM/Tivoli Systems Inc.'s Tivoli Enterprise Management suite.

Tivoli, Hewlett-Packard Co. and others are looking at technical problems and developing technical solutions, Dortch said. CA is backing up a step to the business goal and developing a technical approach enterprises can "use to make more money." ◗

The Frontrunners





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CA's Capacity-based Pricing Irks Users

BY MARC L. SONGINI
AND JAIKUMAR VIJAYAN

Computer Associates International Inc., like rivals such as IBM and BMC Software Inc., is under tremendous pressure to find continuing revenue in a very mature market for mainframe tools and management products, according to Pat Cicala, president of Cicala and Associates LLC, a contract management consultancy in Hoboken, N.J.

Particularly annoying for users is capacity-based pricing on the mainframe — an ongoing issue for big-iron shops in general. Under capacity-based pricing schemes, companies are forced to pay software fees based on the overall capacity of the mainframe, even if the vendor's software is running on only a small portion of the system.

Sherry Irwin, chair of the Toronto-based Canadian Software Asset Management Users' Group, said capacity pricing is a "big issue."

"It's unfair because it really handcuffs you in trying to enlarge the mainframe," said a technical design consultant at a financial information publisher on the East Coast.

"[CPU capacity pricing] kind of stops a company's growth because they can't expand a mainframe without paying a lot of fees," he said.

IBM's recent shift to a long-demanded usage-based pricing model with its Z/OS mainframe software — and the support for it from rival vendors — is forcing CA to at least re-evaluate its policy.

"There is tremendous pressure on CA to do something creative to get out of the doldrums," Cicala said.

CA's Plans Uncertain

CA executives have been cagey on the subject. Since last October, CA has been testing a new subscription-based pricing model that permits flexible pricing terms in some areas, allowing users to avoid being locked into contracts for years at a time. However welcome, this change doesn't address the core issue.

In an attempt to offer more options to its largest customers, CA is also testing a new scheme that ties software prices to the business value derived from the software.

But whether users can expect to see an end to capacity pricing on mainframes anytime soon may become a test of the company's pledge to listen to, and act upon, user complaints.

"On one hand, they [CA] say they are listening to the customer, and responding on the other hand by saying they won't support subcapacity pricing, which is an industry direction," complained Irwin.

BRIEFS

Red Hat Reports Loss, Narrows Focus . . .

Linux software vendor Red Hat Inc. reported a $55.3 million net loss for its second quarter ended Aug. 31, and said it's narrowing its strategic focus to target Unix-to-Linux migrations by corporate users and embedded systems applications. The Research Triangle Park, N.C.-based company had revenue of $21.1 million in the quarter.

. . . While Caldera Cuts Jobs, Products

Caldera International Inc., which sells several open-source operating systems, announced an 8% workforce reduction and said it plans to streamline product offerings and consolidate some facilities. The layoffs affected 51 employees and followed losses of $40.3 million in the first nine months of Orem, Utah-based Caldera's current fiscal year.

Verio Plans Layoffs

Web hosting company Verio Inc. said it plans to start focusing on large enterprise users following a series of losses and its acquisition last year by Tokyo-based NTT Communications Corp. Englewood, Colo.-based Verio also announced plans to consolidate data centers and lay off about 25% of its 3,000-plus workers in the U.S.

Short Takes

Bedford, Mass.-based PROGRESS SOFTWARE CORP. reported net income of $4.9 million for its third quarter ended Aug. 31, down 29% year-to-year. . . . Plano, Texas-based ELECTRONIC DATA SYSTEMS CORP. extended a tender offer for Cypress, Calif.-based UNIGRAPHICS SOLUTIONS INC., but said it should control enough shares to complete the planned acquisition this week. . . . Plymouth, Minn.-based server appliance maker TRICORD SYSTEMS INC. said it was laying off 50 workers.

Server Vendors Add To Midrange Reach

HP follows IBM's lead by moving more of its high-end features downward

BY JAIKUMAR VIJAYAN

ONE WEEK AFTER IBM announced a midrange Unix server featuring technologies borrowed from its mainframes, Hewlett-Packard Co. responded with a 16-processor system designed to handle users' needs for more robust midrange machines that still cost less than their high-end counterparts.

Some analysts said the HP Server rp8400 should help bolster the company's competitive position against rivals such as IBM and Sun Microsystems Inc. HP last week said the new machine sits between its eight-processor N-class server, which is now being renamed the rp7400, and its 64-CPU Superdome high-end box.

"It gives the [HP] installed base a lot to look forward to," said Jean Bozman, an analyst at Framingham, Mass.-based market research firm IDC. "There's been some pent-up demand for a server like this."

HP is targeting a big gap between the midrange and high-end markets that server vendors haven't been addressing very effectively, said Rich Partridge, an analyst at D.H. Brown Associates Inc. in Port Chester, N.Y.

The rp8400 is based on HP's new PA-8700 microprocessor and integrates several features migrated down from Superdome. The approach is similar to the one IBM took with the eight-processor eServer p660-M1 system that it introduced two weeks ago.

Like IBM's eServer, the rp8400 supports capacity-on-demand processor upgrades and includes technology that can deal with problems such as memory-based systems failures and faulty CPUs that require dynamic de-allocation of processing workloads.

Also integrated into HP's system are hardware and software partitioning, and a range of high-end management tools, including a processor resource manager and workload-management functions.

Affordability

Such features deliver Superdome-like capabilities at a more affordable price, said Rich Rankin, a senior systems administrator for the government of Clark County, Wash. The county, which uses a mix of HP systems, plans to install one of the rp8400 servers in the next few weeks.

Clark County was looking for a midrange server to run a new finance application from Oracle Corp. and to consolidate applications from some of its older HP boxes. Rankin said the county needed something larger than HP's N-class servers but couldn't afford a Superdome machine.

According to HP, Superdome has a base price of $450,000. By comparison, the company said an entry-level rp8400 with two processors starts at $124,000.

The rp8400's small footprint, hot-swappable components and support for modular upgrades are also appealing, said Dave Nardi, a systems administrator at The Yankee Candle Co. in Whately, Mass.

"We're a 24/7 shop, so we just cannot have any downtime," said Nardi, who plans to install an rp8400 server next year. HP's system design should let users expand or repair their servers without completely shutting down the machines, he added. ◗

On the Same Track

HP's new rp8400 midrange system supports up to 16 processors, twice the number that can be installed in IBM's eServer p660M1. But the rival machines have many similar features, including the following:

- ►Memory capacity ranging from 2GB to 64GB
- ►Support for instant processor upgrades as capacity needs increase
- ►Predictive hardware and software failure alerts
- ►Dynamic CPU and memory allocation and de-allocation tools

Terrorist Attacks Weigh On Oracle's Sales Forecast

Company cuts license forecast for its second quarter

BY SUMNER LEMON

Top executives at Oracle Corp. last week said a yearlong slowdown in sales of new software licenses showed signs of bottoming out during the company's first quarter ended Aug. 31. But that was before the terrorist attacks on the U.S.

The word that sales had firmed up in the company's first fiscal quarter was tempered by concerns that the attacks will have a negative effect on Oracle's financial performance this quarter.

"We don't think things are recovering," Oracle Chairman and CEO Larry Ellison said during a conference call. "In light of the latest events in New York and D.C., we're anticipating things will get slightly worse."

Oracle reported first-quarter income of $510.6 million on revenue of $2.24 billion two weeks ago, but it declined to comment on the results at that point because of the attacks, which had taken place just two days earlier. The revenue total was down slightly from the year-earlier level of $2.26 billion, while profits rose 2% from $500.7 million.

Jeffrey Henley, Oracle's chief financial officer, last week said the first-quarter results reflected a slowing of the steep decline in software sales that has hit the company. But new license sales to users during the quarter still fell 8% on a year-to-year basis, he added.

"While [sales in] the U.S., Europe and Asia didn't get any worse this quarter, they certainly didn't get any better," Henley said. And while Oracle initially thought its second-quarter results would mirror those of the first quarter, he said, the company now expects purchases of new licenses to drop 15% from last year's level.

Henley also predicted that both earnings and total revenue would be flat with the results from last year's second quarter. "Things are now murkier because of what happened [Sept. 11]," he said. "We know there will be some negative effect. The question is, how much?"

Nonetheless, Henley did hold out some hope for the near future. Oracle officials "continue to believe that the U.S. economy will slowly begin to recover in 2002," he said. ◗

Lemon is an IDG News Service correspondent.

MARYFRAN JOHNSON

Whatever It Takes

THAT'S WHAT IT PROFESSIONALS nationwide stand ready to do to help New York revive in the aftermath of Sept. 11. Donations of IT equipment, services and support have poured into *Computerworld*'s Volunteer IT database (*www.computerworld.com/volunteer*), which has registered more than 2,000 companies and individuals in this effort to harness the talent and generosity of IT professionals.

MARYFRAN JOHNSON is editor in chief of *Computerworld*. You can contact her at **maryfran_johnson@computerworld.com.**

We became a coordination point for IT volunteers just two days after the destruction of the World Trade Center. As reporter Melissa Solomon was researching a story about IT groups assisting high-tech volunteer efforts, she called New York-based AIT Global, an association of IT and industry professionals. AIT's e-mail query to its network of 2,700 contacts snowballed into an astonishing number of phone calls to *Computerworld* from IT people who wanted to help.

The next stop for our growing database of Volunteer IT donations — which can be sliced, diced and mapped into Excel spreadsheets for easy e-mailing — will be with several civic, relief and volunteer agencies that can match up needy businesses with the right IT resources.

"People volunteered to take leaves from their jobs to pitch in," said Solomon, who was flooded with offers to help from Intel, CSC, Computer Associates, SAP, Nortel and others. "Compaq put a team of experts on standby to help. Columbia University offered up about 1,000 volunteers to match volunteers with businesses in need or to offer IT support themselves. OperationIT threw in office space and free employment-matching services for workers left jobless and companies that need to fill jobs as a result of the attacks."

As many individuals as companies wanted to contribute. An IT pro at Deutsche Bank, whose own WTC office was destroyed, volunteered his skills in anything from computer security to programming. "I was a former bike messenger in NYC and know the streets well," he added. "I'm also an Eagle Scout and have some first aid training." Typical of the responses were these words from a banking manager with both technical skills and a law degree: "Let me know if I can provide any help, no matter how small or menial."

The *Computerworld* staff can never adequately thank the IT community for this outpouring of support, for your great willingness to do whatever it takes. But we thank you anyway for this enormously comforting display of the human spirit at its very best. ◗

PIMM FOX

The ROI Has Changed

A LINGERING tragedy of Sept. 11 is that we have plenty of IT systems that could have made it more difficult for the terrorists to carry out their plot. We just don't use them.

But as IT managers try to establish normal routines in the coming weeks, their technology will have a specific — and increased — role to play in maintaining people's security.

IT has long been viewed as a tool for cost savings — automating tedious tasks and improving communications — but its role in security is about to change. New federal rules and money make it all but assured that airports, border posts and ports of entry will adopt a combination of biometric and information-based security measures.

PIMM FOX is *Computerworld*'s West Coast bureau chief. Contact him at **pimm_fox@computerworld.com.**

Indeed, there are countries, such as Sweden, where biometric security measures are already in operation to ensure that the person whose name is on the ticket is actually the person boarding the plane. Photos aren't enough.

Carriers such as El Al take it even further. The airline maintains detailed records of its passengers. El Al security agents know about every passenger on each flight even before they arrive at the check-in counters. Names are cross-referenced with lists of suspects prepared by Interpol and Israeli intelligence agencies.

And fingerprint technology from companies such as Identix has been used for background checks of airline and airport personnel in the U.S. for several years.

Databases with personal profile information maintained by the Immigration and Naturalization Service and the FBI, as well as the national Automated Fingerprint Identification System (AFIS), which is already used by state law enforcement officials, will be connected to these on-site identification systems. Several states, including California, New York and Texas, already use AFIS to encode a piece of your fingerprint on the bar code of your driver's license.

Rather than just looking for ways to save money using IT, management will increasingly be forced to link fingerprint, smart-card and pass-

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word technology together in a closed loop — without regard for ROI. Instead of looking at IT as a way to save money, you will be asked to use it to help save lives.

Companies will be working with federal agencies to adopt ID and background-check systems similar to those already in use by financial services and health care firms.

Yes, civil liberties will be affected by these measures, but the safety of people will become paramount.

Greater use of IT — whether it be a smart-card ID system like the one implemented in Spain six years ago or a $65 fingerprint device attached to a PC at a U.S. airport — will save lives. ◗

MICHAEL GARTENBERG

Balancing the Expense and Expertise of XP

WINDOWS XP is a major release that will finally unify the Microsoft Windows family under a single core of stable technologies first introduced with Windows NT.

While the economic times make a large operating-system migration difficult for many organizations, XP offers some significant benefits for IT departments, but only if they haven't transitioned to Windows 2000 and are still running aging versions of Windows 9x. With Windows 2000 having an estimated installed base of only about 10%, according to market research firm Gartner, IT departments need to consider XP, but only as part of new machine purchases and not as upgrades.

MICHAEL GARTENBERG, former vice president and research area director at Gartner Inc., is an independent technology analyst and consultant. Contact him at michael.gartenberg@mindspring.com

Like the Windows 2000 predecessor on which it's based, XP Professional is more stable and reliable than any version of 9x. Many of XP's features are consumer-oriented and not needed by enterprises. But its overall robustness, combined with better tools for desktop control and management and support for mobile technologies, makes XP an attractive choice for enterprises. An organization that takes advantage of the improved desktop manageability and stability can translate that directly into lower total cost of ownership (TCO) of about 18% to 26% per year, according to Gartner, making the upgrade costs from Windows 9x justifiable.

The problem is in balancing "soft" TCO savings with the "hard" dollars needed for a migration during tough economic times. As a result of the economics, many IT departments should look at ways to begin migrating to XP only as part of ongoing technology refresh cycles, instead of as large-scale migrations and upgrades of individual machines already in place.

There are other hidden costs that may also inhibit migration. Enterprises must develop some level of Windows XP expertise. This includes both staff training and application and hardware compatibility. A Windows XP support infrastructure, including people, processes, practices and tools, must be established for a successful migration to occur.

In addition, while most systems and applications that are at least a year old will work without problems under XP, all applications must be tested for compatibility, and new products must be qualified to upgrade or replace those found to be incompatible. Users should pay special attention to custom-developed applications that may not conform to Windows development standards.

Mission-critical applications such as those in a call center or line-of-business applications should be fully endorsed and supported by the software provider to run on XP. This entails costs, and while enterprises have been on notice about the shift toward NT-based technology and may have replaced older applications as part of Y2k preparations, the cost of application upgrades may inhibit many enterprises from going to XP, even as part of a technology refresh.

But given these two prerequisites, it's not only safe to deploy Windows XP for all new desktop and laptop hardware during normal refresh cycles, but the best ROI will be obtained by leveraging these cycles as well.

Windows XP represents a challenge and an opportunity for IT organizations. Much of the framework for migration decisions depends on where an organization is in terms of hardware life cycles, as well as its needs for XP stability and operating-system management tools. IT organizations that can leverage their refresh cycles will have the easiest time migrating and can take advantage of the better manageability and the resulting lower TCO. Upgrades of in-place systems are harder to justify and should be balanced carefully against both TCO and ROI. ◗

READERS' LETTERS

Wrong Conclusion

IN THE READERS' Letters of Sept. 10, Ardy Hagen wrote that my findings about steadily rising total assets/total revenue ratios from 1982 through 1999 were misleading ["Diet? What Diet?," Business, Sept. 3]. He stated that using such ratios would cause corporations to discard all computers. Hagen's interpretation of what I wrote is incorrect.

My analysis referred to corporate assets such as inventories, receivables and work in process and not to computer assets, which are relatively insignificant.

The purpose of my article was to show that after enormous spending on computer systems, their impact isn't reflected in lower asset ratios, despite contrary claims. If the data for 1,840 major U.S. corporations doesn't show lower assets, that doesn't suggest discarding computers, but should be seen as evidence that they could be managed better.

Paul A. Strassmann
CIO, 1961-93

Lucky Staffers

BRENT Woodworth's tips don't apply only to getting through a disaster ["Ten Tips for Getting Through a Disaster," *Computerworld.com*, Sept. 13]. I'd crawl on my knees over broken glass to work for a boss who followed these rules. If he follows them in a disaster, well, I hope his staff realize and appreciate how lucky they are.

Linda Chapman
N.E.W. Curative Rehabilitation Inc.
Green Bay, Wis.
lchapman@newcurative.org

Debunking Columnist

NICHOLAS Petreley is way off base in his Sept. 3 column, "Debunking Microsoft" [Technology]. As a teacher who has been working with .Net since last year in a production environment and who is teaching one of the first .Net courses at the University of San Diego, I find some of his comments confusing because I don't know where he got some of his "facts."

David McCarter
Editor/writer
VB Tips & Tricks
San Diego
davidm@vbtt.com

Who Uses StarOffice?

MICROSOFT'S recent licensing announcement was enough to inspire me to look into replacing Microsoft Office on our company desktops. We've been investigating Sun's StarOffice as an alternative and find it promising. But my senior management would like to know who currently uses StarOffice. We found very little information on the Internet, and we can get very little information out of Sun on this question. I contacted a StarOffice user group with this question and got the same "I don't know" answer, along with a sarcastic closing comment for even asking the question. With 5 million copies downloaded, according to Sun, how does anyone find out who is actually using StarOffice?

Bob Heritsch
Milwaukee

COMPUTERWORLD welcomes comments from its readers. Letters will be edited for brevity and clarity. They should be addressed to Jamie Eckle, letters editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 879-4843. Internet: letters@computerworld.com. Include an address and phone number for immediate verification.

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THIS WEEK

IT VOLUNTEERS PITCH IN

After the recent terrorist attacks in the U.S., IT departments and firms around the world lined up to offer their technical support to companies whose operations were affected. But it's not just during times of crisis that the IT community pitches in. **PAGE 28**

ENTICING END USERS

To help application development projects succeed, IT project teams need to elicit user interest from the start and keep them engaged. **PAGE 32**

PRODUCTIVITY PUZZLE

When productivity falls and profits shrink, corporate spending gets pared and the overall economy suffers. That's why IT managers need to find new approaches to boost worker output. **PAGE 38**

NO MICKEY MOUSE OPERATION

Life isn't all fun and games for IT workers at Walt Disney World in Orlando. The 500-plus IT staffers are responsible for supporting more than 20,000 users and maintaining systems that support the world's most famous amusement parks. Still, the work environment and perks are first-rate. **PAGE 43**

JOE AUER/DRIVING THE DEAL

Clear Ordering Procedures

WHEN YOU REVIEW a proposed vendor contract, you'll probably discover that only the most basic information is documented about a key component of the relationship: ongoing ordering procedures. If this doesn't seem like a big deal, think again, because you could be left open to problems down the road at a very inconvenient time. Suddenly, an order of something you need desperately could be in jeopardy, and so could your project.

In one particular case I ran across recently, the contract's language stated that the customer could submit orders using the vendor's standard order form. Electronic transmission was acceptable. The vendor could substitute an item of equal or greater value if the originally ordered item wasn't available. Sounds simple, right? The problem lies in what's missing from the ordering procedures.

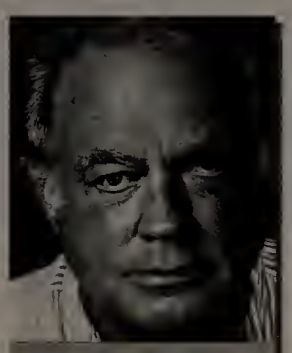
Ongoing vendor supply contracts should clearly spell out how the ordering process works, including both parties' responsibilities. The following are six key specifics to include in your agreement:

- Authorize certain customer personnel (usually designated by the title of a position rather than an individual's name) who can place a binding order.
- Specify the order form to be used, such as the vendor's standard form or a mutually agreed upon format. Specify the minimum information the order should include.
- Clearly spell out the vendor's order acceptance criteria. This is very important. Don't assume that a submitted order will automatically be accepted. The vendor should be required to notify you promptly that your order has been accepted and should provide a delivery date.
- Require the vendor to notify you promptly if your order isn't accepted and to specify the reason. An order may be rejected simply because it's incomplete. It's important to understand why your order was rejected and how to get it accepted.

If your contract allows for order substitutions, the vendor should also indicate any items that will be substituted, with specific details. Don't overlook substitutions. Some may not work in your environment, so it's better to find out before your order is shipped.

- Ensure that the contract provides order-cancellation procedures that indicate how and under what conditions an order may be cancelled as well as an agreed-to timing notification and applicable costs.
- Clearly define the manner in which returns are to be handled, and define any fees a vendor would charge.

Including these specifics in your agreements allows for a smooth, effective ordering process that increases the likelihood that a product will be provided in a timely manner. Leaving out necessary details may save time when negotiating, but it's almost sure to add time and effort when you can least afford it — when you actually need an order from your vendor. So again, be comprehensive and clear in your contracting.



JOE AUER is president of International Computer Negotiations Inc. (*www.dobetterdeals.com*), a Winter Park, Fla., consultancy that educates users on high-tech procurement. ICN sponsors CAUCUS: The Association of High Tech Acquisition Professionals. Contact him at **joea@dobetterdeals.com**.

Mail Bag

Charles McCain, an independent business management consultant in Georgia, sent me this sound advice: "Your Aug. 27 column dealt with the possibility of billing disputes. It brought to mind that you might consider recommending a binding arbitration clause in all high-tech procurement contracts."

McCain pointed out that the American Arbitration Association (AAA) has panels for both commercial and technology disputes.

He continued: "In all the years I was with Xerox and buying hardware, software and services, I always inserted the standard AAA binding arbitration clause. Fortunately, it was never exercised. But I always felt more secure knowing the dispute would be resolved by arbitrators who understood the language and issues rather than by 12 people who were picked because they didn't know anything. Also, my boss was pleased to know that the resolution would be private and that it would not make headlines in the local newspaper or *The Wall Street Journal*."

You're absolutely right. My only caveat is that you might want to specify that only certain things in your contract should be arbitrated, like billing dispures. Your lawyers may feel that other issues are better off being decided in court.

When companies let their IT professionals give their time and expertise to volunteer programs, they get loyal workers and future leaders in return. By Melissa Solomon

IT'S BEEN MORE THAN 20 years since Pol Pot ended his reign of terror in Cambodia, but the ghosts of the past still torment the nation.

Bones of the nearly 2 million Cambodians slaughtered by Pol Pot's Khmer Rouge soldiers still lie in the Killing Fields. "Danger: Land Mine" signs litter the vast rice paddies. Then there are the children like Reiwa, the 2-month-old girl who died of AIDS on a muggy morning in May after her village spent the night praying for the spirits of the dead to leave them in peace.

"We have a battle cry," says Craig Muller, standing in a field halfway around the world from his own children. "The battle cry is 'No more funerals.' "

Muller, an Internet entrepreneur from Chicago, has spent the past two years putting his business know-how to use to transform the lives of orphans and widows — and, in turn, whole communities — in Cambodia. With only two paid employees working at his nonprofit venture, Warm Blankets, Muller must rely on volunteers, many of whom are employees at his for-profit business, CultureWorx Inc., a Mount Prospect, Ill.-based employee-incentive service provider.

"I feel like what they're doing has real value to it," says Bill Schmidt, a network administrator at CultureWorx who donates approximately four or five hours of IT support each week to Warm Blankets, which is located down the hall from his office. "It's nice to be forced to look at it because I wouldn't have otherwise. I never would have gotten involved."

CultureWorx is just one of a growing list of companies with missions that extend beyond the bottom lines. After the recent terrorist attacks against the U.S., businesses around the world offered assistance to those in need. But it's not just in times of crisis that businesses help out. Many have efforts under way day in and day out. Not only do these firms shell out dollars for various charitable causes, but they also make it easy for their employees to lend a hand to those less fortunate, whether by wiring a school district across town or by building a medical treatment database for orphanages halfway around the world.

It's not just nonprofit groups that reap the benefits. Corporations also see returns from volunteer activities because they help workers build and sharpen their technical, leadership, teamwork and organizational skills, says Michael Stevenson, manager of information resources at The Center for Corporate Citizenship at Boston College in Chestnut Hill, Mass.

Volunteer programs also help spread the message that a company is a caring member of the community, which can be priceless from a public relations standpoint, adds Stevenson.

Because of the charitable hearts that beat within these companies, many of their rank-and-file workers say they feel a real sense of pride in their employers, which translates into a more satisfied, loyal workforce.

"You just get an opportunity to reach outside yourself, maybe look past what you wanted for you and realize, 'Hey, there's a lot of people out there who need a lot more than I do,' " says Schmidt. "People here are not all about themselves. It's not just this cutthroat, bottom-line, where's-the-money kind of organization."

The Expert Touch

John Lorimer has a lofty goal. He wants to see technology drive every function within Warm Blankets.

Officially, he's the director of product management at CultureWorx, but he spends approximately one day each week helping Warm Blankets develop wireless handheld systems to collect and track medical information about orphans, as well as databases to store their records. Lorimer also helps produce e-mail newsletters and build Web features to give charitable donors real-time information about the orphanages they sponsor, complete with streaming video and digital photos.

"It would be great if everybody could go to Cambodia and see it for themselves," says Lorimer. "It really is a life-changing experience. But everybody can't go."

So he wants to use technology to bring donors on a virtual tour — past the Buddhist temples, through the mud paths and around the back yards of the bamboo shacks, to the new orphanage being built in Barray.

"It's just another dimension, and to me, that's very exciting," Lorimer says. "I look at it and I see the mountain that needs to be climbed."

Like Lorimer, other IT workers are learning just how valuable their skills are in the nonprofit world. In 1998, Eric Hancock and two co-workers at New York-based Home Box Office, a division of AOL Time Warner Inc., offered IT assistance to some friends who volunteered at nonprofit groups.

Lending A Hand

Wal-Mart Stores Inc., Ben & Jerry's Homemade Holdings Inc. and Microsoft Corp. have all become synonymous with philanthropy. The following are a few examples of volunteer efforts at other companies:

- Employees at **MERCK & CO.** and **BAYER CORP.** teach hands-on science to students and teachers in their communities.
- **UNITED PARCEL SERVICE INC.**'s Welfare to Work Partnership program teams the company with organizations around the country to recruit, train and assist welfare recipients in finding jobs.
- **CAPITAL ONE FINANCIAL CORP.**'s Leadership Grants program teams the company with nonprofit agencies to provide educational opportunities, life skills and leadership training for at-risk children.
- **EASTMAN KODAK CO.** sponsors "digital villages" in townships in South Africa to increase the level of computer literacy there.
- **PHILIP MORRIS COS.** employees serve food in soup kitchens, volunteer at shelters for battered women and deliver meals to the homebound, elderly and people with AIDS.

Higher Ca

Anders Hejlsberg

From: Anders Hejlsberg (Microsoft)
Sent: September 14, 2001, 2:51 PM
To: Developer & IT Professionals
Subject: Delivering .NET: Visual Studio .NET and the .NET Framework

Although unnamed at the time, Microsoft .NET began more than four years ago when we envisioned a common platform for building applications that could be delivered as reusable, interoperable services over the Internet.

Built around industry standard protocols, the Internet proves ideal for scalable application deployment. Unfortunately, current distributed application methodologies, such as DCOM, CORBA, or RMI, do not scale to the Web. They may work well in homogeneous environments but do not enable true integration across different systems and are difficult to deploy and maintain.

Through our extensive work with the standardization of XML and SOAP, we realized how applications would be built in the future to enable true integration across the Web. The result is Microsoft .NET, Microsoft's platform for XML Web services. A new agile application architecture, Microsoft .NET was designed from the ground up to leverage the distributed nature of the Internet.

Core to .NET is a new toolset & architecture—one in which developers are free to mix and match new and existing components while leveraging the diversity of programming languages and tools developers use today. Enter Visual Studio .NET and the .NET Framework.

Together, this toolset and architecture enable the next generation of XML Web services and applications and dramatically simplify application development. Visual Studio .NET and the .NET Framework are designed with deep integration of Internet standards and protocols, such as XML and SOAP. The .NET Framework automatically takes care of much of the underlying infrastructure, allowing developers to focus on writing the business logic code specific to their applications. For example, the .NET Framework:

- Provides a common set of application programming interfaces (APIs) and a unified set of classes and components across all popular programming languages.
- Removes the complicated aspects of COM, such as reference counting and registering components.
- Includes dozens of components that encapsulate common tasks, such as building a shopping cart with ASP .NET.
- Enables you to build and expose the same business logic code as either an XML Web service, an HTML page, or, using the Microsoft Internet Toolkit, as a page that is automatically formatted for a variety of mobile devices.

The .NET Framework guides you along a path of creating applications with a stateless, loosely connected programming model, which is what characterizes the Web.

With support for more than 20 programming languages, Visual Studio .NET and the .NET Framework enable developers to leverage their existing skills to build new XML Web services and applications. Widely popular, Visual Basic is now a first-class, object-oriented programming language that includes features such as implementation inheritance, structured exception handling, and free-threading. In addition, we've created a new language, C#, as the first component-oriented programming language in the C and C++ family to combine the power of these languages with the functional ease of modern, rapid application development tools.

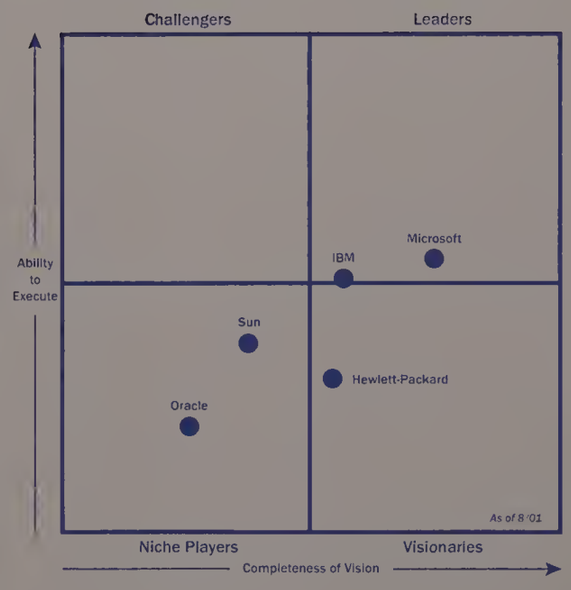
In June 2001, we reached a major milestone by delivering Beta 2 of Visual Studio .NET and the .NET Framework. They provide the foundation for Microsoft .NET, a platform that fully enables XML Web services, and we expect them to have an even greater impact on technology than Visual Basic 1.0 had 10 years ago.

We are on the final approach to shipping Visual Studio .NET, and I am very excited by the number of customers, partners, and Microsoft services that have already deployed solutions on the .NET platform. Leading-edge IT organizations like Dollar Rent-A-Car, Continental Airlines, Zagat Survey, and others, are using the .NET platform today to deploy XML Web services. As we move forward, more and more products from Microsoft and its partners will support the vision of making the Internet programmable through any kind of device—and you'll see more and more XML Web services in use. I hope you are as excited as I am to get these new tools and to start building your next generation of applications with .NET.

Anders Hejlsberg
Microsoft Distinguished Engineer and chief architect of C#

From Babel to Babylon. The single largest problem facing your organization is integration. How are you going to handle it? You are looking at a new business relationship, but your business partner is using software with which you can't integrate. You just acquired a new company, and their software can't talk to your software. Even your existing applications don't talk to each other. This is the situation in IT today. Tomorrow, everything will be different.

A deceptively simple standard, Extensible Markup Language (XML), is turning the way we build and use software inside out. XML Web services are a component model for application development—a model that assumes integration is a central part of the development process. Coupled with technologies introduced by the Internet,



*Source: Gartner, "Web Services Major Vendors," D. Smith, August 2001**

XML is demolishing the integration Tower of Babel, and creating a Babylon of XML Web services. With the availability of XML Web services, companies now have the opportunity to transform the Internet into a true platform for integrating and delivering their core business value.

Widespread support within the developer community and throughout the computing industry around standards such as XML and HTTP ensures that XML Web services will allow all businesses to accelerate and deepen the level of interaction with their consumers, their employees, and other businesses.

XML Web Services: Building the Universal Protocol

The XML Web services architecture is founded on the principles of connection, communication, description, and discovery.

1. A common language is needed to **connect** and share information with others. XML is *the* universal data format that makes connection possible by providing a standard format for data exchange that does not require your business partners or customers to use a particular programming language, application, or operating system to interact with your systems.
2. Simple Object Access Protocol (SOAP), the new World Wide Web Consortium (W3C) XML Protocol for exchanging data, enables systems to **communicate** and make requests—for example, to call a service, schedule an appointment, order a part, or deliver information—through a common protocol.
3. Additionally, you need to **describe** the functions an XML Web service performs. Web Service Description Language (WSDL) is a standard format in which a service can publish the names of functions, the parameters that are required, and the results returned from any XML Web service.
4. Finally, businesses need a way to **discover** services on the Internet for consumption. Universal Description, Discovery, and Integration (UDDI) is a broad industry effort to make it easy to locate and understand other companies' XML Web services. Think of UDDI as a kind of "yellow pages" directory of XML Web services. (http://uddi.microsoft.com)

Together, these principles enable you to deliver XML Web services across the Internet or an intranet regardless of the programming language, computing device, or object model you use. As long as the fundamental communication occurs through XML Web services, different systems can remain independent from each other. For example, a Microsoft® Windows®–based application can interact directly with an XML Web service running on a UNIX server, and can do so without expensive and proprietary integration technologies.

> "This is the way development is supposed to be: the environment helps you every way that's appropriate, but otherwise stays out of your way. If you develop on a Windows machine, you're probably going to want to use Visual Studio .NET."
>
> *Martin Heller, BYTE*

Microsoft .NET: Visual Studio .NET and the .NET Framework

Microsoft .NET is Microsoft's platform for XML Web services. Today, Microsoft is focusing the .NET platform on five areas: clients, servers, XML Web services, user experiences, and tools. Microsoft is building software in all these areas, ranging from Windows XP and Windows .NET Server to a suite of building-block services that manage your calendar or list of favorites. The products and services within Microsoft .NET will interoperate with a broad set of XML-based products across vendors.

> "From our partners' perspective, accessing our content via Web services will be far easier than what they've had to go through in the past. They will no longer need to build the infrastructure to import, store, and manage it. When combined with our new flexibility in licensing options, this means we'll have a far more attractive package to offer to prospective partners."
>
> *—Stephen Forte, CTO, Zagat Survey*

Making the .NET vision a reality requires both an agile architecture and a set of highly productive development tools. In Microsoft .NET, Microsoft delivers both of these elements.

The Microsoft .NET Framework is Microsoft's programming model for building and working with XML Web services. Built from the ground up for the loosely coupled Web environment, the .NET Framework provides an agile, productive, scalable environment for integrating existing applications with next-generation XML Web services.

Microsoft Visual Studio® .NET, a development tool designed for XML Web services, exploits the capabilities of the .NET Framework by providing the most productive system for building all kinds of applications, from simple single-tier applications for Windows to client/server applications to *n*-tier applications composed of XML Web services.

XML Web Services: The Agile Application Architecture

XML Web services provide a simple, flexible, standards-based model for integrating applications. Developers can easily assemble new applications from existing and new code, regardless of the platform, development language, or object model used to implement any of the constituent services or applications. This development

> "...transforming a COBOL developer into a professional Java developer will cost an enterprise approximately $57,000 in expenses and losses, an amount equal to almost 90 percent of a COBOL developer's salary."
>
> *Gartner, "The Cost of Migrating COBOL Developers to Java," J. Feiman, R. Flatau Reyoso, September 2000*

framework translates into business agility by making it simple to integrate within your company and to link with business partners.

Visual Studio .NET, coupled with the .NET Framework, is the only environment today built from the ground up for XML Web services. The .NET Framework's support for XML Web services is complete—from internal data types that map to SOAP, the core standard for XML Web services, to innate features in ASP .NET that make creating an XML Web service a matter of one line of code. Microsoft's next-generation Windows Server product line, Windows .NET Server, expands the XML Web services capabilities by including features such as Passport/Active Directory™ integration.

Guarantee the "abilities." The "abilities"—reliability, scalability, deployability, and so on—are all about the operational aspects of applications. The .NET Framework extends the core capabilities in Windows Server, making it faster, more reliable,

"We were twice as productive [using the .NET Framework and Visual Studio .NET] as we were on the initial release of the solution."

– *Tore Lode, Senior Developer, CyberWatcher Inc.*

and more secure than ever before. In fact, through improved caching and compilation, ASP .NET, the Web application environment in the .NET Framework, is three times faster than its competition. [See Nile Application Benchmark chart] Improvements to the process model mean that applications run more reliably, delivering 100 percent perceived uptime to the user. "No-touch" deployment features make application installation as easy as copying software onto the disk drives of client machines or to the servers in your data center, and new applications won't interfere with existing applications.

Maximize developer productivity. Tying together XML Web services requires a new breed of application architecture and development tool. Today, Visual Studio developers lead their profession in writing high-performance applications. They are accustomed to having the most productive tools for building applications that use client- and server-side components. Visual Studio .NET moves these skills to the next generation by making it easy to build, use, and publish XML Web services. Visual Studio .NET provides the most comprehensive set of tools for building the broadest range of applications for a variety of user interfaces, including rich clients, browsers, and mobile devices.

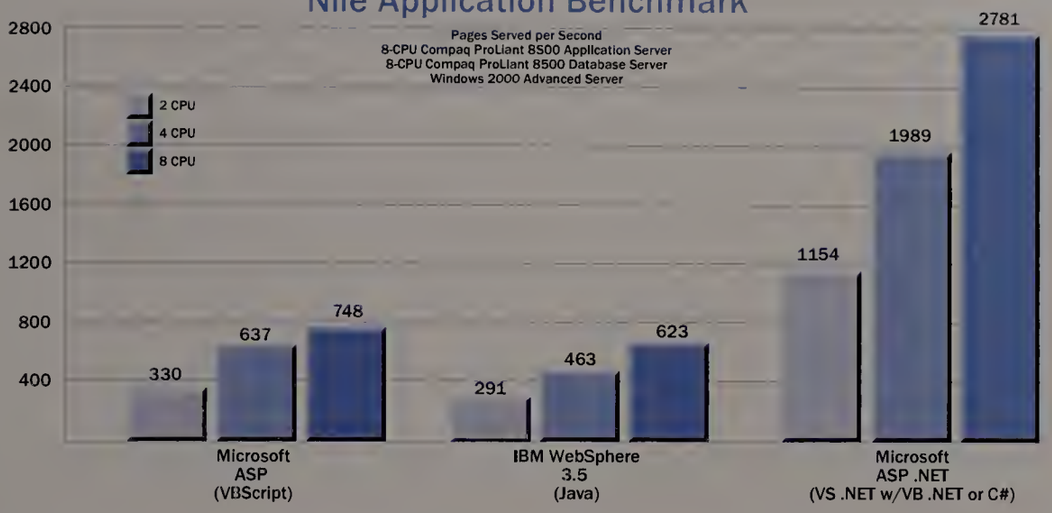
"Compared with similar projects in the past, we're measuring deployment time in hours instead of weeks."

Ferdy Khater, Director of Application Development, Continental Airlines

The key to the .NET developer experience is that it comes naturally to developers, with little or no retraining. For example, the .NET Framework makes it easy to build XML Web services in any programming language—from Microsoft Visual Basic® .NET, with its new object-oriented programming features, to Microsoft Visual C++® .NET, Perl, Java, COBOL, or RPG. The selection of a programming language becomes a personal choice. Companies can now draw on the entire pool of developers and are not limited to using a single programming language.

Tying the entire development process together, Visual Studio .NET provides features for enterprise development—including the design, testing, and deployment of the application, as well as coordination with other team members. Visual Studio .NET targets the entire development life cycle and is a powerful platform for third-party development solutions, providing access to a wide variety of developer tools in a consistent environment.

Visual Studio today is the most productive tool for developers. Visual Studio .NET unleashes the next generation of application development, marrying RAD, enterprise development, and XML Web services and applications.



Microsoft .NET tops IBM's best result by over 300 percent. .NET is significantly faster and more scalable than WebSphere 3.5 Enterprise Edition. It also bests ASP/COM+ in performance. The Nile Application Benchmark is a Doculabs/Ziff Davis e-commerce benchmark that represents a complete end-to-end e-commerce application with realistic, heavy user loads placed on the system.

All results based on Windows 2000 Advanced Server. IBM WebSphere 3.5 Enterprise Edition running on Oracle 8i database. Microsoft ASP and Microsoft ASP .NET running on SQL Server 2000 database.

SOLVING REAL BUSINESS PROBLEMS: ZAGAT CASE STUDY

Zagat Survey, the premier provider of restaurant rating guides, was expanding their business to include travel and entertainment guides. They were publishing restaurant guides in over 45 cities worldwide, managing thousands of restaurant reviews, and bringing all of these features online. Zagat was using a set of nonintegrated utilities that required manual intervention to publish data to both the company's Web site and paper-based guides.

After evaluating several options, Zagat decided to leverage XML Web services and Visual Studio .NET to create an integrated solution for content management. Visual Studio .NET facilitated simple integration with their Web site and traditional book publishing systems, which enabled them to syndicate their restaurant ratings and reviews to third parties and find new business opportunities.

Using an XML Web service, Zagat can easily publish restaurant rating information to partners from a simple database query based on a restaurant name. Among other information, Zagat's restaurant review database tracks the restaurant's ratings on food, décor, and service. To illustrate an XML Web service, the following functional example shows how the restaurant rating information might be exposed. Note that the actual production system includes more features and has a richer security model.

Build an XML Web service. Visual Studio .NET includes a New Project wizard that enables developers to build an XML Web service with just a few mouse clicks. The following Visual Basic .NET code sample uses a simple SQL Select statement to return the rating information. [See Figure 1] The values are stored in the Ratings structure, which is automatically serialized to the XML Web service caller.

Continued on 5

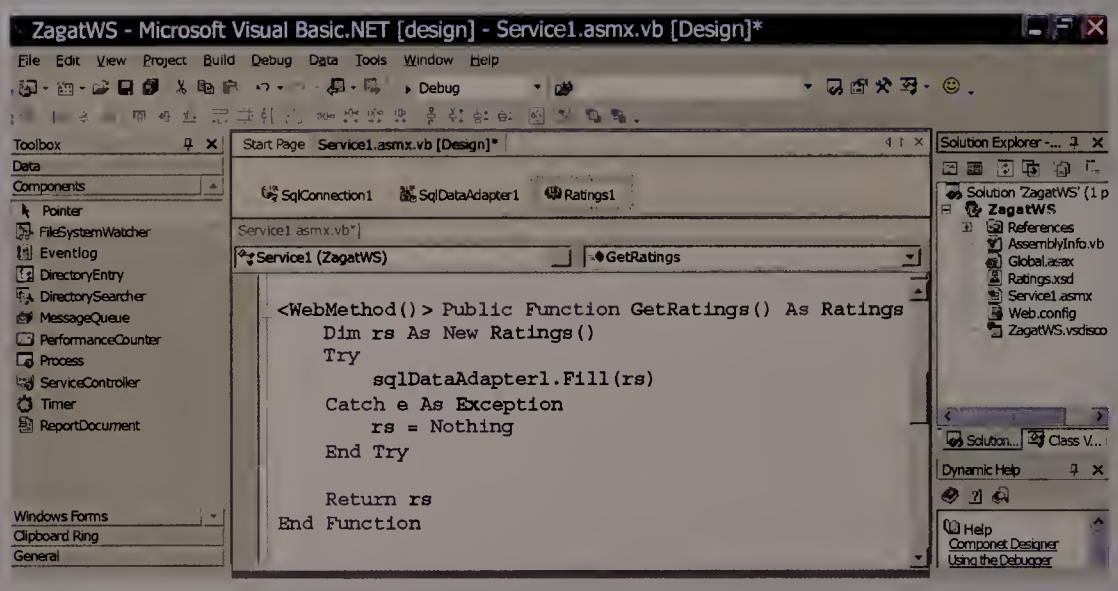


*Figure 1. Building an XML Web service with Visual Studio .NET is as easy as adding the **<WebMethod()>** directive.*

```
<?xml version="1.0" encoding="utf-8" ?>
-<Ratings xmlsns="http://tempuri.org/">
-<diffgr:diffgram xmlns:msdata-"urn:schemas-microsoft-com:xml-msdata"
   xmlns:diffgr="urn:schemas-microsoft-com:xml-diffgram-v1">
  -<Ratings xmlns=http://www.tempuri.org/Ratings.xsd>
    -<Ratings diffgr:id="Ratings1" msdata:rowOrder="0">
          <Restaurant>Coho Winery</Restaurant>
          <RestaurantID>1</RestaurantID>
          <Food>20</Food>
          <Decor>21</Decor>
          <Service>23</Service>
          <cost>26</cost>
       </Ratings>
     </Ratings>
   </diffgr:diffgram>
</Ratings>
```

Figure 2. Visual Studio .NET automatically generates the XML for your Web service. (Schema information omitted)

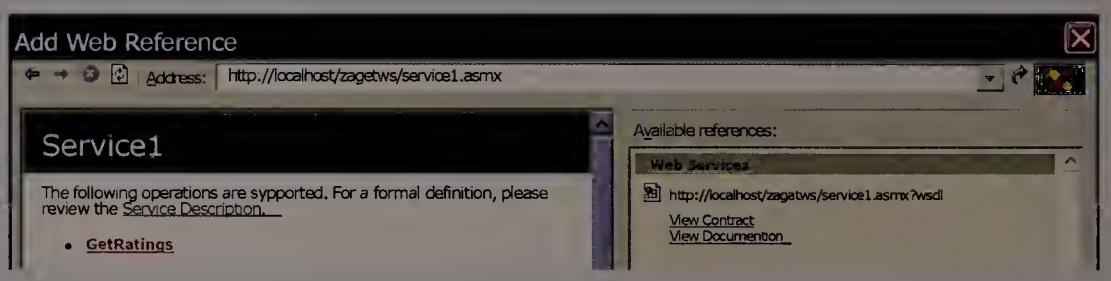


Figure 3. Consume an XML Web service using the Add Web Reference feature.

The important new **<WebMethod()>** directive is all that is needed to expose the **GetRatings** method as an XML Web service! The remaining code executes a simple database query and returns the results to a Ratings variable. The database connection is created by simply dragging the Ratings table onto the design surface of the page. In addition, notice the new *Try...Catch* syntax for handling errors and the *Return* keyword—powerful features introduced in Visual Basic .NET.

Test the XML Web service. In Visual Studio .NET, one command compiles the XML Web service and displays a test page that allows you to invoke the method from a Web page. The XML Web service returns the Rating information as XML and can now be invoked via SOAP or HTTP GET. The .NET Framework manages the incoming parameters, object invocation, and the XML serialization of the return value. [See Figure 2]

Use an XML Web service. Using and consuming XML Web services with Visual Studio .NET is just as easy as creating them. From a new Web Application project in Visual Studio .NET, you add a Web Reference to the service's URL, as shown. [See Figure 3]

The XML Web service can now be utilized as if it were an object in your project, with the same powerful IntelliSense® statement completion, code colorization, and syntax checking that you have for local objects.

"With Visual Studio .NET and the .NET Framework, we've been able to do more with less programming effort than we ever dreamed of—it's almost as if Microsoft knew the specifics of the application that we're developing. Our developers are at least twice as productive as they were before."

—Stephen Forte, CTO, Zagat Survey

Get Started Now

1. Get Visual Studio .NET Beta 2 and the .NET Framework.
2. Create a pilot project to evaluate XML Web services, and publish it on the Internet. Developers looking to deploy XML Web services will find a new Web Hosting tab on the Start page in Visual Studio .NET. The Web Hosting tab gives developers access to a list of Web hosters that provide free Web space to facilitate the live deployment of XML Web services.
3. Get training on how to create XML Web services and to use Visual Studio .NET.

A subscription to *MSDN® Universal* provides you with priority access to Visual Studio .NET and delivery of the resources, servers, and product updates you need to learn about Microsoft .NET.

Get Visual Studio .NET Beta 2 and start building XML Web services. Visit **microsoft.com/net** for more information.

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> I love this. It's incredible to see how far these kids have come.
>
> CRAIG MULLER, FOUNDER, CULTUREWORX AND WARM BLANKETS

LEFT: Craig Muller, founder of Warm Blankets, embraces a baby during a recent visit to one of the orphanages his organization supports in Cambodia; BOTTOM LEFT: Muller and Rich Ludwig of Warm Blankets say a teary goodbye to children they met on their trip; BELOW: Children at a Phnom Penh orphanage smile as Muller shows videos he took of them singing.

MELISSA SOLOMON

llings

But when they saw what an enormous need there was to help set up Web sites, do minor database work and wire computer labs, they formed Voluntech.org, which has since drawn 450 volunteers to provide IT support to more than 200 organizations in the New York City area. The organizations they assist are thankful for whatever help they can get, so volunteers of all skill levels are welcomed with open arms.

"When you think about volunteering, you think about serving lunches or doing clerical work or painting schools," says Hancock. "But the main selling point that I always try to mention is that you do this every day in your work environment and you're often not very appreciated. Here, you can do something that's pretty basic and utterly baffle people.

"Once you start, it makes you want to do more because of the gratitude and the thanks. It gets pretty embarrassing," he says, clearing his throat and chuckling. "They're so excited and so grateful, and you think, 'Well, I really didn't do much.' "

Bruce Genut, a principal engineer in network systems at Stamford, Conn.-based Xerox Corp., spent an entire year teaching IT support to staff and volunteers at Science Linkages in the Community (SLIC), an organization that creates and supports local technology centers in Genut's hometown of Rochester, N.Y.

He was one of six Xerox employees chosen last year for the company's coveted social-service leave, a program that lets up to 20 employees per year take on full-time volunteer projects with full pay while temporary workers fill in for them at the office.

"It was a once-in-a-lifetime experience," says Genut, who still volunteers at SLIC in his free time. "I thought I had something special and I could do something that most folks cannot."

Robert Bowman is driven to volunteer for the opposite reason. As information manager for integrated supply chains in developing markets at Xerox, Bowman puts in long hours on the job. So in his free time, he chooses to do something completely separate from his work.

"As an [IT] manager, I probably spend 50 to 60 hours a week on my job," Bowman says. "I carry a beeper, and I'm on call 24 hours a day."

Volunteering gives him the chance to get away for a while, explains Bowman, who coordinates Xerox's Community Involvement Program, the umbrella

program for all of the company's volunteer initiatives, in Rochester. "It kind of recharges my batteries," he says.

Even the best intentions can get sidetracked, and as the economy continues to slow, companies will likely look to cut back on their contributions and focus on their own bottom lines.

But, says Stevenson, it's important for companies to try to find a balance.

"We've gone through these periods before," he points out. "Times do get better, and you don't want to alienate communities during a temporary slump, because they're going to be your workers and customers when things get better."

The Conference Board Inc. in New York surveyed 1,000 Americans in 1999 and found that nearly 89% agreed that large companies should do more than just focus on achieving profitability within the law. Forty-six percent said they had bought merchandise from a particular company or had spoken out in favor of a company because of its social responsibility. And 49% said they had decided not to purchase a product or had spoken critically of a company because it didn't meet their standards for social responsibility.

Sometimes volunteer programs can even help companies through the more difficult times, Stevenson says. For example, bringing people together to build a computer lab at a local school can ease what he calls "survivor slump" and get those who have survived layoffs focused on something more positive than the gloomy or questionable future of their company or their jobs.

Volunteer programs can also pay off in the long run, according to the report "Conversations with Disbelievers: Persuading Companies to Address Social Change," by John Weiser, a partner at Brody Weiser Burns in Branford, Conn., and Simon Zadeck, chairman of the London-based Institute of Social and Ethical AccountAbility. For instance, they can help ease companies' entry into new markets, reduce negative consumer activism or boycotts, and provide free advertising through positive media coverage and word of mouth.

Extending the Mission

Corporate volunteerism can even directly contribute toward a company's mission, Stevenson points out. For example, Cincinnati-based LensCrafters Inc. delivers eye care to developing countries. Sunnyvale, Calif.-based Yahoo Inc.'s Camp Yahoo teaches schools, nonprofit groups and service organizations how to use the Internet. Microsoft Corp. runs community technology centers.

Freddie Mac is involved in several volunteer initiatives — such as helping build homes for Americus, Ga.-based Habitat for Humanity International — that are directly related to its mission of promoting affordable homeownership, says Toby Allen, manager of employee involvement at the Washington-based company.

Freddie Mac also gives monetary donations to employees who launch their own volunteer projects. Through its Dollars for Doers program, the company sponsors employees who volunteer at least 25 hours of their time to charities.

The return on such investments is enormous, says Laurie Dalton, director of benefits at Freddie Mac. In annual employee-satisfaction surveys, 86% of workers say the volunteer opportunities are among the top reasons why they feel good about working there, she says.

Such is the case for Ron McKenzie, a technical analyst at Freddie Mac. He participates in a variety of volunteer programs through the company, including the Special Olympics, which he attends each year with his 11-year-old daughter, Natasha.

"It's been a great experience for me, and it's helped my daughter [empathize with others], because I say, 'If not for an act of God, it could have been you; it could have been me,' " he says.

McKenzie says he took the job at Freddie Mac because of the work and the compensation package. But once he got there, it was the volunteer opportunities and support the company offered that made him feel at home. That, he says, is what keeps him there.

McKenzie and Shelly Pine, assistant general counsel at Freddie Mac, are two of the volunteers who pitch in at the J.C. Nalle Elementary School in southeast Washington. Since Freddie Mac "adopted" the school in 1992, employees have been taking kids on monthly field trips, training teachers to use computers, helping to wire the school for the Internet, and mentoring and tutoring children.

Pine acknowledges that volunteering can be a strain on his schedule at times. "It can be tough, no question about it," he says. But, he quickly adds, it's worth it. "It breaks down barriers because I get to know people I wouldn't know otherwise," says Pines. "We [volunteers] talk about the problems we have with our 'mentees,' and then we go into a [work] meeting. It helps build a real team spirit that I don't think you can get just by working in a corporate environment."

Volunteer work, he says, promotes an excitement and loyalty that the job itself or a hefty paycheck can't provide. "If someone came and waived $10,000 or $20,000 under my nose and said, 'Come work here,' I'd really hesitate," says Pine.

But even Muller is shaken in his conviction at times, especially when he thinks of the kinds of odds he's facing, like the fact that almost 18% of Cambodian children will die before the age of 5.

"I feel like I want to cry out to God," he says as his taxi bounces along the rough road to Siem Reap's airport. "It's that feeling of helplessness. You just can't do enough."

But when he sees the smiles on the faces of the children who, until recently, had never been given a reason to smile, he remembers what brought him to Cambodia in the first place and what's driving him to extend Warm Blankets to Africa.

"I can't stop crying," says Muller as a group of singing children encircle him. "I love this. It's incredible to see how far these kids have come. There are so many miracles here." ◗

Build Your Own Program

Here are five ideas to help you build a volunteer program. Visit ***www.pointsoflight.org/assistance/assistance_corporate_twentyideas.html*** for more suggestions.

1. Invite board members and shareholders to participate in volunteer projects.

2. Have new employees fill out a volunteer interest and skills form.

3. Choose volunteer programs that contribute to your company's mission.

4. Share volunteer success stories with employees, retirees, stockholders, customers and suppliers.

5. Conduct preretirement seminars that include information on volunteering.

SOURCE: POINTS OF LIGHT FOUNDATION, WASHINGTON

Quick Link

Read more about Warm Blankets and about how your company can start its own volunteer program at: **www.computerworld.com/q?23448**

IT Volunteers Recharged By Peace Corps

AS VICE PRESIDENT OF OPERATIONS at Neuberger Berman Inc., Mirella Shannon helped lead the New York-based financial services firm. Since leaving her post last year, she's been helping to rebuild a nation.

Shannon is one of 25 volunteers assigned to the Peace Corps' IT initiative in Belize launched in July last year. She's built computer labs, trained teachers and is now teaching in a new bachelor's degree program at the University of Belize.

"It's hard work, in that you have to be a creative problem-solver," Shannon says. "I had a large staff. I had secretaries. I had copiers. I had just about everything at my disposal. And here, I have my head and my two hands."

It was Shannon's daughter who started researching the Peace Corps last year, but it got Shannon thinking. "I was a '60s child," she says. "I wanted to do it then but couldn't."

As they say, better late then never.

For young volunteers, "I think this is a wonderful training ground," Shannon says. "You're going to do problem-solving you're never going to see [elsewhere]." For more experienced workers, she says, "it is a method to re-energize yourself, to get your hands into it again."

Bob and Jo Link also had dreams of joining the Peace Corps after college. But when Bob was drafted into the Vietnam War, those dreams faded. Like Shannon's, his dreams resurfaced through his daughter, Jenna, who now serves as a teacher in the Philippines.

At first, the Links thought it was a crazy idea. They had good jobs in Hawaii: Jo was a teacher, and Bob was a network/systems manager at Canada-France-Hawaii Telescope Corp.

"Then we said, 'Why not? Life is short. Let's go for one more adventure,' " recalls Bob Link, who teaches an introductory computer class to primary school teachers with his wife in Belize's capital city, Belmopan.

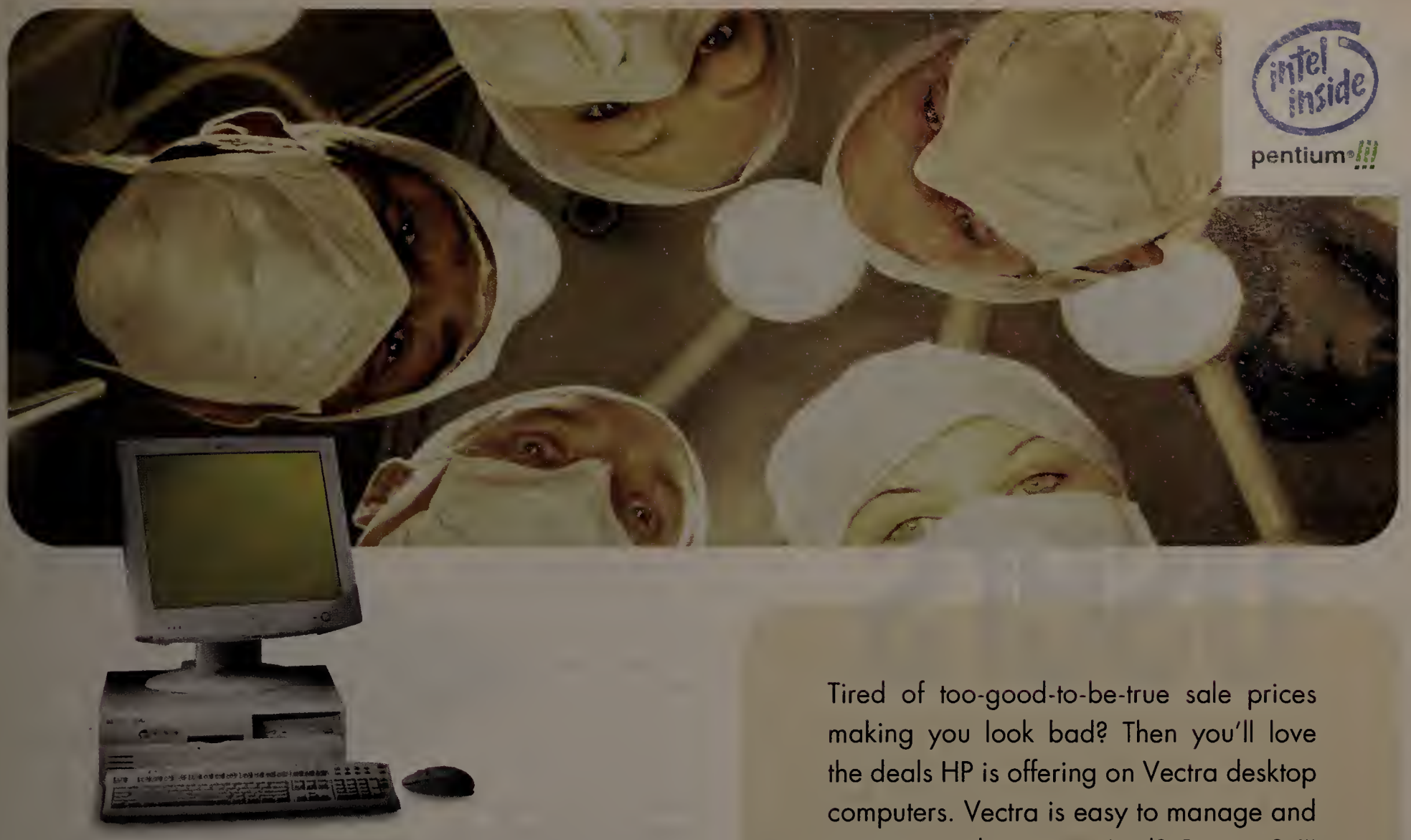
"Some of these people have never seen a computer before," he says. "In a small country like this, you can have a big impact. So it feels good."

The Links aren't sure what they'll do when their service ends next summer, but they say they'd like to continue to serve others. "It kind of opens your world up a little bit," Bob Link says.

When asked what she'll do after her service ends next August, Shannon pauses.

"I don't know," she says. "Isn't that a wonderful answer?"

– Melissa Solomon



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Engaging Users

Here's how to get end users involved in application development.

By Kathleen Melymuka

IN THE MID-1980s, Shirley Wong was part of a team developing software for an automated 411 system at a large West Coast telephone company. After a great deal of work, the team unveiled the system to universal hisses and boos. "The operators didn't want it," recalls Wong, who is now the webmaster at Optodyne Inc. in Compton, Calif. The company had wasted at least $1 million on the effort, and as a result of the fiasco, the project director and three managers were fired.

The problem: The operators who would be using the system were never consulted about their needs.

Times change, IT shops have evolved, and many project managers realize how crucial users are to a project's success. But how do you get users to take requirements gathering seriously? "This is probably the biggest problem at most companies," says Bill Berghel, a project manager at FedEx Express, an operating company within FedEx Corp. in Memphis.

To get users engaged, start by educating their bosses, says Naomi Karten, president of Karten Associates, a customer service consulting firm in Randolph, Mass. Demonstrate how important user input is to the success of systems. Use real examples to show the benefits of doing things right and the consequences of doing things wrong.

Once they get it, make sure they buy in on every project. "Senior managers have to make sure that people below them make the time," says Peter Goundry, MIS manager at Aircast Inc., a medical device maker in Summit, N.J.

Take Them Seriously

Don't expect business people to take you seriously if your IT staffers don't take them seriously. "Too often, IT people have no idea what's going on," Goundry says. Make sure your requirements gatherers understand the business and consider business priorities. "IT is 100% of what you do but only 10% of what they do," adds Karten.

Pick the right people. A programmer with poor communications skills or one who thinks he knows better than users may not be the ideal person to gather user requirements, says Anthony O'Krongly, CIO at Galactic Marketing Incentives Inc. in Arlington, Texas.

Users often fail to take requirements seriously because they believe they can order changes to the system later, he adds. They'll be more motivated if you announce there will be a six-month moratorium on changes once the system is in place.

When requirements gathering begins, treat each session as an important meeting, and never meet at the user's office, O'Krongly suggests. "The phone and the drop-in questions will kill your momentum and your meeting," he says. Find an out-of-the-way place to meet, and turn off your cell phones.

Don't ask what users want; find out what they need. "Focus on what ails the user, not what the user wants in a system," says Rob Norris, CIO at Pinnocol Assurance in Denver.

"Users don't always know what they want," says Sue McKay, CIO at Aircast. "Sometimes, you have to help them understand that what they think they want won't give them what they need."

For example, end users may have heard about some cool executive information system to produce management reports and may not realize the same information is already available through existing databases.

Don't make the mistake Wong's group made. Talk with enough people to really understand the business process you're trying to facilitate. "If you are creating a new sales system and you're only dealing with the VP of sales, you're doomed," O'Krongly says. Don't forget the sales representatives, sales assistants and customers.

When users explain things, ask them to explain again to be sure you understand, says O'Krongly. He also suggests having at least two sets of IT ears listening to pick up holes in the logic, follow up on technical implications or ask "stupid" questions, such as "Are we talking PCs or iMacs?" Then explain things back to the users to be sure you understand. And plan on meeting with people more than once, because they're sure to have second thoughts later.

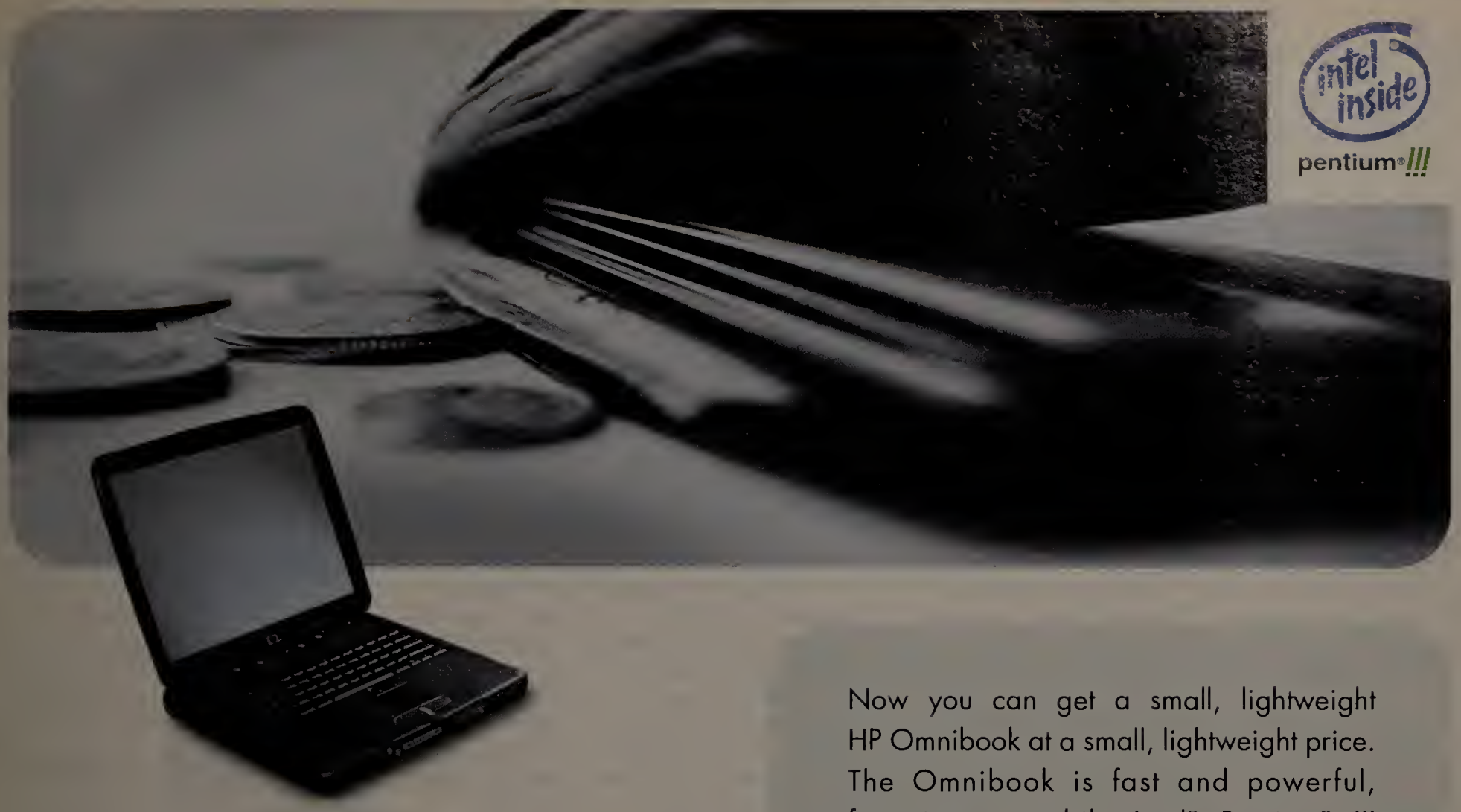
One of the best ways to get users interested and keep them engaged is to make them partners through rapid application development. "We show a series of prototypes to the users and work toward what they do want," says Berghel. Each iteration should take only days, to keep up the momentum.

No matter how well you do, no system will last forever. "The world changes; users' needs change," Berghel says. But getting the right stuff from users in the first place will make for better systems in the long run.

Quick Link For a related story on how to engage salespeople in application development projects, go to: www.computerworld.com/q?23248

10 STEPS TO USER ENGAGEMENT

1. Get management buy-in.
2. Understand the users' business.
3. Consider their priorities.
4. Assign good communicators.
5. Talk with users all along the business process.
6. Don't meet at their offices.
7. Turn off cell phones.
8. Focus on users' problems, not on IT.
9. Listen well; explain things back.
10. Use prototypes.



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KEVIN FOGARTY

Glory Days Are Gone

IT'S SEPTEMBER 2012. The end of another long, hot, miserable summer for those of us who still call ourselves high-tech vendors.

Remember the way it used to be? When technology was changing everything and all you had to do to get rich was save the world? Remember when you could spin a grand vision of the future one day and be swamped with customers the next?

Remember when IT users were so spooked by all the visions that they'd sign off on any new e-thing, as long as the suits thought it was cool?

Throw in a reasonable-sounding ROI, promise that you'd make them innovators and the checks would start flowing. For a while, anyway.

Originally, it was just tech vendors and IT — nice and comfortable. We made the geekware, and they made sure IT was mysterious enough that the suits couldn't object too much. As long as the sales force got lots of cool gadgets and the CXOs got enough hand-holding, everyone was happy.

Then Y2k showed that none of us were so smart after all. Electronic transactions frozen, data centers grinding to a halt, reactors melting down, golf carts suddenly powerless. Images like those conjured up the threat of an IT disaster that even a CEO could recognize.

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We almost missed it, early on, with the Amazon.coms, the Yahoos. But we got the idea. We told corporate America that if it couldn't keep up with change, it would get Darwinned into oblivion.

Talk about a boost in sales!

And the start-ups — pure incremental revenue. Except for a few bucks for cappuccino makers and fancy chairs, every dollar of that venture capital swag went directly to us. Billions.

The money came at us like water from a fire hose. We barely counted it. When we wanted more, we shipped Version 2.002, changed the licensing or added a new color box and called it an upgrade.

ERP, CRM, supply chain, B2B, B2C, B2E, i-commerce, m-commerce — they bought everything.

We rolled in it. Stock options, fancy cars, interviews in *The Wall Street Journal*, photos in *Red Herring*. One quote in *Fast Company*? Sorry, you're not in the club until you do *Money Line*.

And the geeks got theirs, too. Big salaries, job offers — glamour, even. Can you imagine?

Sure, we knew it was a bubble. We told one another every day that it had to end. But it went on and on and on. So when it did crash, even though we knew it was coming, we were shocked. We thought there would be a recovery. But it never came. No more upgrades, no new systems. The economy bounced back, but technology stabilized. We stagnated.

KEVIN FOGARTY is a former *Computerworld* editor. Contact him at **kevinjfogarty@yahoo.com.**

Instead of buying IT, users rented. CFOs fired their techs, bare-knuckled ASPs into tough contracts and sent them away feeling like utilities.

The rest of us had to buy and sell one another just to keep busy.

We didn't so much get shoved aside as absorbed. All our best stuff got built into other things. IT became a feature, not a product.

Pens that do e-mail, notebooks that do research; everything's smart. Who cares what chip is in your watch as long as it tells you the weather and when the Des Moines store needs more inventory?

We're not innovators anymore; we're parts suppliers.

And when the paradigm shift did come, we weren't even ready. Nanotech. Biotech. Quantum computing. Smart-ooze manufacturing. Mad scientist stuff, but that's the way the world works now.

We changed it for them once. The world, I mean. Not that anyone remembers.

And all we asked is that they make us rich and powerful and famous. And they did for a while. We were *it*. They needed us. Then they stopped.

Bastards. ◗

BRIEFS

Conference Adds Surveillance Content

The Privacy2001 Conference, which is scheduled for Oct. 4 in Cleveland, has been expanded to cover increased government surveillance activities as a result of the terrorist attacks on the World Trade Center and the Pentagon.

"The privacy issues surrounding government surveillance activities are especially timely right now," said David Sobel, general counsel at the Washington-based Electronic Privacy Information Center, who will serve as a panelist at the conference.

Timothy J. Muris, chairman of the Federal Trade Commission, will be the keynote speaker in a program that will include more than 40 other privacy experts.

For more information about the conference, go to *www.privacy2000.org/privacy2001/*.

ICANN Domains Are Poised for Launch

It has been almost a year since The Internet Corporation for Assigned Names and Numbers (ICANN) approved seven new top-level Internet domains, but not one has been launched. That's about to change.

Two of the new domains – .biz and .info – will launch Oct. 1, and the .name domain will be activated Dec. 13.

Contracts for three other domains are being finalized by Marina del Rey, Calif.-based ICANN: .museum for museums, .coop for business cooperatives and .aero for the airline industry. An agreement for the seventh domain, .pro, hasn't yet been finalized.

L'Oreal Tools Up To Manage Transport

The consumer products division for New York-based L'Oreal USA Inc. has reached an agreement to use Atlanta-based Logility Inc.'s Voyager Solutions transportation management application suite.

The software includes tools to provide real-time visibility and collaboration between customers, suppliers and transportation providers via the Internet, as well as enterprisewide management of inbound, outbound and interfacility transportation.

Voyager Solutions software also handles private fleet routing, as well as mode and carrier selection, in-transit shipment tracking, carrier performance audits and payment of carrier invoices.

Attacks May Hasten Location Services

The Sept. 11 terrorist attacks should prompt greater interest in Emergency 911 location technology for cell phone users, said Alan Reiter, president of Chevy Chase, Md.-based Wireless Internet & Mobile Computing.

Because location technologies can be used to help find people during emergencies, the Federal Communications Commission should consider forcing wireless carriers to adhere to the original Oct. 1 deadline to begin implementing the technologies, he said.

Amazon.com, Target Team Up Online

Later this fall, Amazon.com Inc. is planning to open an online store offering apparel, electronics, jewelry and other merchandise from Target Corp. Beginning next summer, Minneapolis-based Target is planning to use Seattle-based Amazon.com's order-fulfillment, customer care and e-commerce technologies for its various Web sites, which include Target.com, Mervyns.com, MarshallFields.com and GiftCatalog.com. The two companies didn't disclose the terms of the five-year deal, but Amazon.com will receive annual fees as well as fees based on unit sales.

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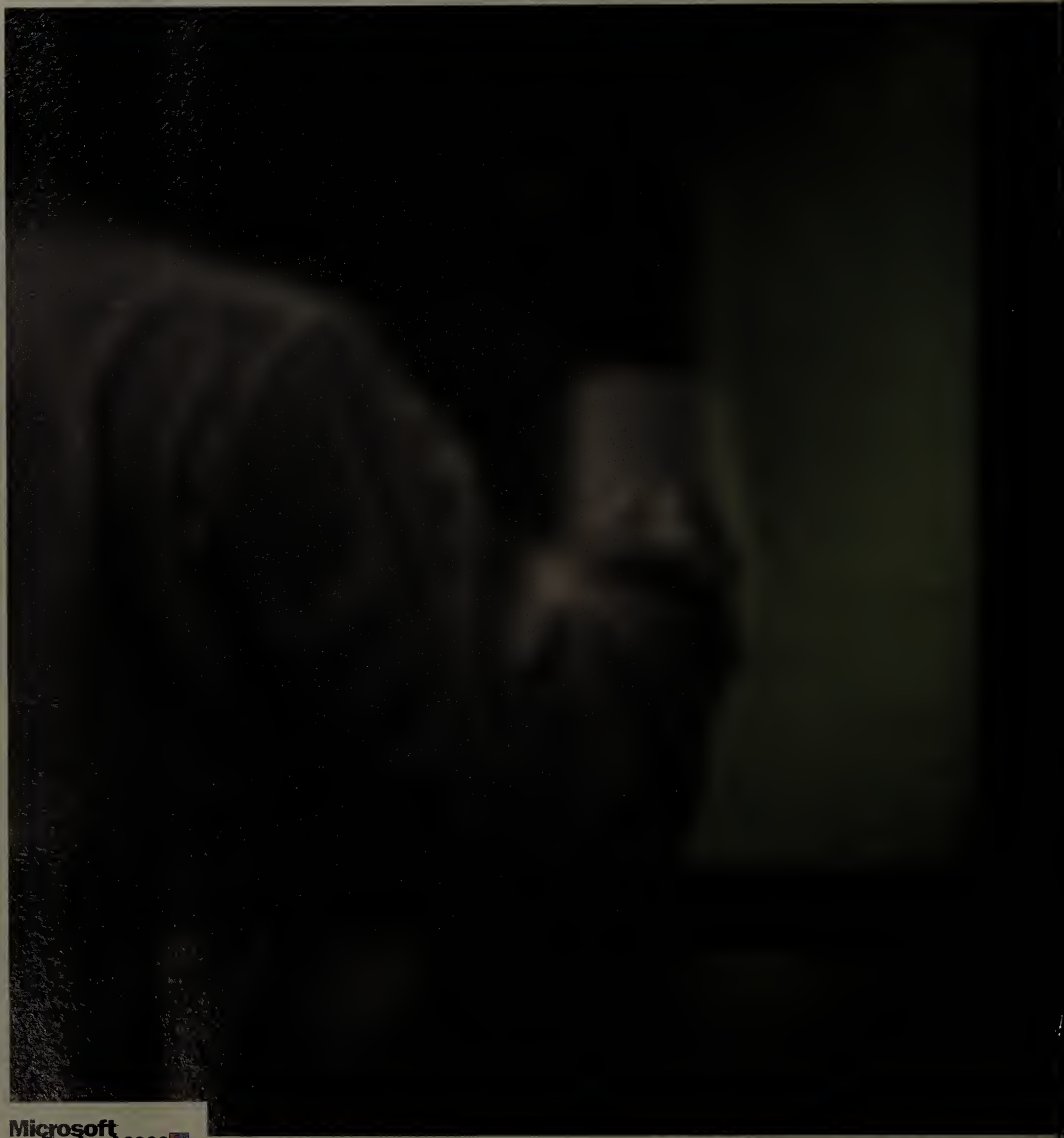

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Microsoft

Productiv

As productivity begins to tail off, along with profits and corporate spending, IT managers need to find new ways to boost output. By Mathew Schwartz

THE EVER-RAGING DEBATE over whether technology actually increases productivity seemed to have finally been settled during the height of the New Economy, when the U.S. Department of Labor reported that productivity had reached an all-time high.

Then the market crashed, productivity hit the brakes, and the Labor Department admitted in July that due to a computer glitch, it had overreported productivity statistics for the years 1997 to 2000 by 23%.

Whoops.

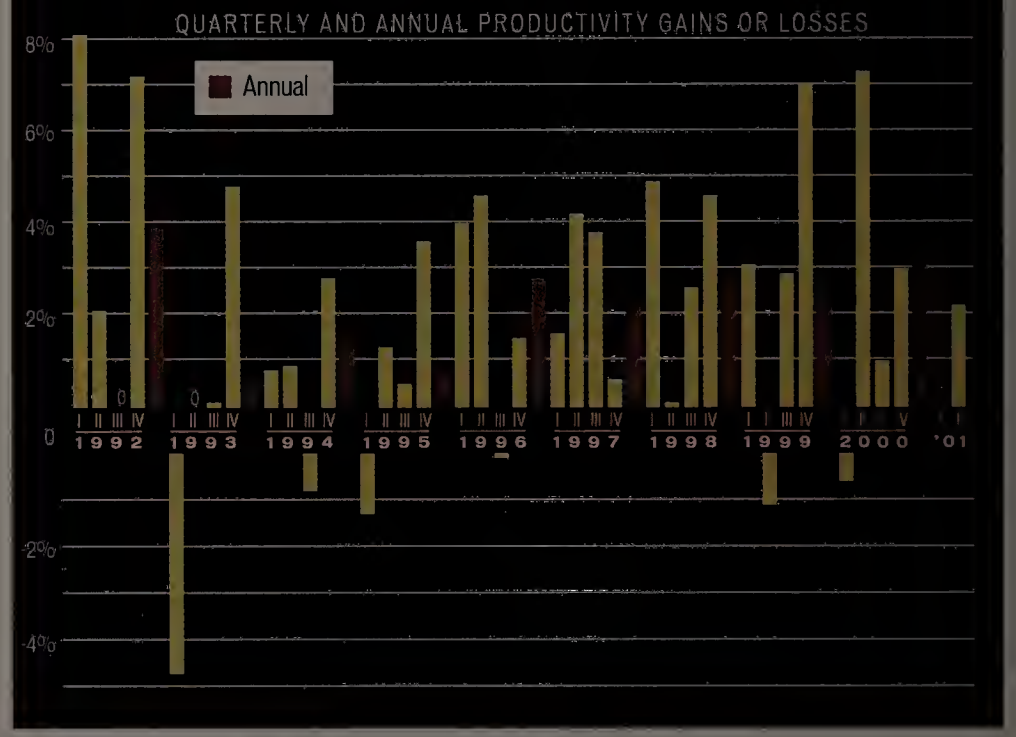
It's a vicious cycle. Lower productivity translates into lower profits, which means IT budgets and head counts could be on the chopping block. Those productivity, profit and budget figures are used by the Federal Reserve Board and its chairman, Alan Greenspan, to help formulate economic policy, which in turn affects companies' revenue plans and productivity levels.

That leaves corporate managers with two burning questions: What can they do to regain their lost productivity, and how can IT help?

Productivity measurements are based on the amount of output a worker produces in an hour. As such, "only if output is greater than input can you have creation of wealth and economic

Behind the Numbers

Some economists contend that IT has contributed significantly to U.S. worker productivity gains, particularly in the mid- to late 1990s, but critics argue that it's difficult to glean IT's contribution from the Labor Department's figures.



growth," says Paul A. Strassmann, president of the Information Economics Press in New Canaan, Conn., and a *Computerworld* columnist. Productivity produces stronger profits, which enables higher wages without inflation, he explains. That leads to an increase in the standard of living.

But it's a balancing act, Strassmann warns. If productivity falls, companies could raise the price of goods to maintain revenues, triggering inflation and eating up any wage gains.

The Tech Debate

Lately, many economists, including Greenspan, have been lauding capital investments in IT for helping to drive the productivity gains achieved during the past few years. In his July 18 report to Congress, Greenspan said that "the outlook for productivity growth over the longer run remains favorable" and that capital IT investments would continue, thanks to new, efficiency-enhancing technology innovations.

A forthcoming report from The Brookings Institution, a Washington-based think tank, offers specifics. It forecasts that within the next five years, the Internet will further improve U.S. productivity by $200 billion annually by making supply chains more efficient and improving customer/supplier communication.

But the Labor Department's recent revision of productivity statistics casts a pall on such optimistic predictions. Northwestern University economist and New Economy skeptic Robert Gordon has written that while the economy and IT investments have driven up productivity and improved living conditions in the U.S. since 1995, 88% of the economy outside of durable goods manufacturing has been on a steady decline. Meanwhile, increased investment in technology hasn't produced commensurate revenue returns for companies, Gordon contends.

That's why Strassmann and other experts suggest that companies should focus on improving existing business processes rather than hope for a set of silver-bullet, next-generation technologies to turbocharge worker output.

In the short term, companies can cut costs by getting customers to do more of the work, in part through the use of automated self-service systems.

"The next big productivity 'improver'? Customers self-managing their privacy rights and permissions," says Thornton May, corporate futurist and chief awareness officer at Guardent Inc. in Waltham, Mass. "It is going to be huge and will make [enterprise resource planning] look tiny in comparison. Very high payback, too."

THORNTON MAY: Self-management of privacy protections "is going to be huge."

Companies need to pay a lot less attention to U.S. productivity statistics and a lot more attention to their individual productivity rates, says May, who is a *Computerworld* columnist.

"Aggregate data doesn't matter anymore, because in aggregate data, we're all above average — that's Garrison Keillor," he says. Instead, says May, companies should measure their own productivity — input vs. output — in terms that make sense for their business, on a micro-productivity level. For instance, companies should measure their productivity in terms of how much it costs them to get accurate customer records.

Where to Start

Getting accurate workflow statistics is the first step toward improving productivity, says Chris Evans, a consultant and the former managing director of Abbey Life, an insurance firm based in Bournemouth, England.

After experiencing 18 months of declining productivity in the early 1990s, Abbey Life got back on track by creating better businesses processes. "We paid greater attention to process design and less to systems," says Evans. "Our goal was to make a 3% savings on unit cost per annum."

Abbey Life tracked the productivity of both individuals and teams. When there was a productivity problem, "we used to use a very crude device," says Evans. "If we felt a team wasn't working as hard as it could, we'd simply not recruit someone new to the team when someone left," he says.

That helped drive up transaction volumes by 40% through the 1990s while the company reduced its staff by 15%, he says. Overall, "we probably achieved a 35% productivity improvement," says Evans.

Strassmann offers a more radical approach to boosting productivity: cutting workers.

"The U.S. has, over the last 10 years, accumulated an enormous overhead," he argues. "In other words, our ratio of administrative cost to cost of goods has increased."

Meanwhile, the cost of making goods has been declining as raw material costs have plummeted — resources such as steel and copper are cheaper than ever, Strassmann points out. The cost of labor for many companies, especially manufacturers, is also down, since much of the work is being outsourced overseas to places where wages are lower, he says.

Companies should start by cutting at the top, says Strassmann. Despite decreases in the cost of doing business, in general, "we have increased our headquarters staff, so now we have more and more headquarters people supervising less, and we cannot sustain that," says Strassmann. "There has to be slimming down." ◗

Schwartz is a freelance writer in Arlington, Mass. Contact him at Mat@PenandCamera.com.

ity Lost

Life After Moore's Law

If history is any indication, new technology typically takes years – if not decades – to achieve its full potential.

Though electricity showed up extensively in factories in the 1880s and 1890s, it wasn't until the 1920s that the first big productivity improvements could be linked to it, points out University of Oxford economics historian Paul David.

"You had to rethink what a factory was," says Andrew Odlyzko, director of the Digital Technology Center and a professor of mathematics and assistant vice president for research at the University of Minnesota in Minneapolis. Old factories were organized around a single power source in close proximity. "Rethinking the workers, the engineers, the employees and what they were doing – it all took time," he says.

Today, some fear that the end of Moore's Law – the 1965 observation by Intel Corp. co-founder Gordon Moore that the amount of computing power doubles roughly every 18 months – could signal the end of technology innovations and perhaps productivity growth. More realistically, Moore's Law might not matter much anymore.

By 2004 or 2005, chips will be so powerful that there won't be the same market demand for their capacity, based on current manufacturing output, says Gerry Kaufhold, principal analyst for converging markets and technologies at Cahners In-Stat Group in Kearny, Ariz.

Even if Moore's Law ceased to hold up tomorrow, "there would still be a lot to be done just to exploit the communications power and capability" of current computing power, says Odlyzko.

But new technology is only the first step. "The real changes that need to be looked at are not technology, but how do the business models, government agencies and social groups figure out how to make the world a better place when we have more technology than we actually need?" says Kaufhold.

– Mathew Schwartz

Additional Resources:

How to spin productivity statistics: www.strassmann.com/pubs/cw/fuzzymath.shtml

Information about Natural Capitalism: http://www.natcap.org/

U.S. Bureau of Labor Statistics data, including productivity: http://stats.bls.gov/top20.html

Federal Reserve Board's Monetary Policy Reports to Congress: www.federalreserve.gov/boarddocs/hh/

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Dear Career Adviser:

I have an MBA and a background in database marketing, focusing on customer information and market segmentation. I started out in a large consumer products company before moving over to a smaller dot-com that no longer exists. Any thoughts about the field and finding new work? — ANALYTICS ADDICT

Dear Analytics:

Professionals with strong database and analytics backgrounds plus dot-com experience are sought-after talent for either marketing analytics or brand-management roles, says Rich Clayton, vice president of product marketing at Responsys, a Palo Alto, Calif.-based company providing interactive marketing optimization tools and services.

The market is particularly strong in areas such as consumer products and financial services, including banking and insurance.

Companies are going to the Web and want to know what to measure. They are aware that many interim metrics that were measured in the dot-com world, such as clickthroughs, didn't produce buyers. Therefore, your knowledge about what to measure, how to truly interpret the results of online campaigns and systems, and the true conversion rates of campaigns to produce actual buyers is valuable.

Be sure your résumé highlights more than just knowledge of customer analytics and online analytical processing tools, advises Clayton. If you can produce a fully burdened cost analysis of a marketing campaign and factor in all of the direct and indirect variables to assess the costs of a product opportunity, you'll be in demand.

Dear Career Adviser:

I have been working on low-level programming languages, such as assembly language, for several microprocessors, including Intel 8086, for Texas Instruments' DSP and on mainframes (application software only). My background also includes Cobol, DB2 and VSAM on the mainframe. I would like to know about current opportunities in this field and also its future.

— COMPETITIVE?

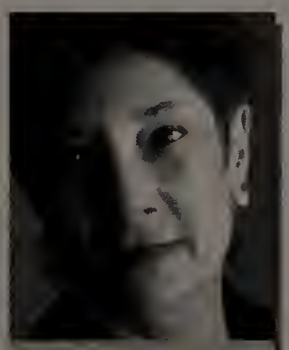
Dear Competitive:

While your experience covers a wide area of software, from mainframe to embedded, your skill set seems somewhat outdated, says Jeff Herbert, senior engineering manager at Cubic Defense Systems Inc., a division of Cubic Corp. in San Diego.

On the embedded side, the majority of software written for the Intel Corp. processor families and Texas Instruments Inc.'s digital signal processing (DSP) language are written in C, with movement toward C++. While some software may still need to be written in assembly language, today's compiler tool sets also maximize both memory and processor efficiency, so the advantage of assembly language programming is now outweighed by the concern for maintainable software.

In addition, while mainframe jobs involving Cobol are available, you would be doing mostly maintenance work.

Your possibilities would expand greatly if you were to gain some skills in C and C++ in addition to DSP, counsels Herbert. Those skills would greatly improve your market value and allow you to find work at more companies. ◗



FRAN QUITTEL is an expert in high-tech careers and recruitment. Send questions to her at **www.computerworld.com/career_adviser.**

EXECUTIVE TRACK

Equant Names Kelly CIO

Equant has appointed Vincent Kelly as its CIO.

Kelly has served as president of the application services division of Equant since 1997, where he led the worldwide delivery of e-commerce and software applications. Prior to that, Kelly served as divisional director for London-based consultancy Logica Inc. Kelly will work from London for Equant.

Equant is a provider of global data communications for multinational corporations. The company is headquartered in Amsterdam and has U.S. offices in Reston, Va., and Atlanta.

Goldfarb Goes Global

Global Knowledge, a provider of IT training programs, has appointed Eric Goldfarb as its CIO. He will report to Duncan Anderson, the Cary, N.C.-based company's president and CEO. Goldfarb was previously CIO at Dayton, Ohio-based The Elder-Beerman Stores Corp.

Goldfarb will be responsible for creating new IT initiatives, overseeing capital technology investments and services, ensuring customer satisfaction, establishing key alliances with IT suppliers and training users on computer systems.

AutoNation Selects CIO

Fort Lauderdale, Fla.-based AutoNation Inc. has promoted Allan Stejskal to the new position of CIO. Previously, he served as senior vice president of e-commerce.

Stejskal will continue to oversee e-commerce operations and report to Michael E. Maroone, president and chief operating officer. On IT issues, Stejskal will report to Craig T. Monahan, chief financial officer.

Prior to joining AutoNation last year, Stejskal served as vice president of the dealer services division at Roseland, N.J.-based Automatic Data Processing Inc.

AutoNation owns and operates 368 franchises in 17 states and generates annual revenue of more than $20 billion.

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WORKSTYLES

Using Fun to Measure Success

What's unique about working in Disney World's IT compared with other IT environments? "To see how IT connects everything across this property. And our IT people get out and see our guests having fun."

Does IT support the attractions in the parks? "No, Walt Disney Imagineering designs and runs the attractions. But we run the network that those attractions are connected to."

Mission-critical systems? "Reservation, sales and ticketing systems. We have a system in our parks here called Fast Pass that's key to customer satisfaction because guests can get advance tickets for an attraction, and then they don't have to wait in line.

"We have a transportation system that tracks and dispatches our buses, and we have systems . . . that track room availability. And our call center applications are extremely critical."

On-site amenities: Exercise facilities; Mickey's Retreat, a recreational facility featuring two swimming pools, tennis courts, boat rentals and rooms for parties.

Workday: "People arrive between 7 and 9, and leave eight or nine hours later."

IT staff training: "A lot of methodology training, middleware and CRM software training and Microsoft certifications."

Dress code: Casual to business casual, depending on the job location.

Perks: Complimentary admission for staffers and their friends and family, discounts on Disney merchandise and at some on-site restaurants.

The last word: "We have a single focus in mind — to deliver consistently the best guest experience you can get anywhere."

Walt Disney World

Interviewee: Roger Berry, senior vice president and CIO

Company: Walt Disney World, which encompasses four theme parks, three water parks, four golf courses and 18 resorts.

Main location: Orlando

Number of IT employees: 500 to 600

Number of end users: About 20,000

Leslie Jaye Goff is a freelance writer in New York. Contact her at lgoff@ix.netcom.com.

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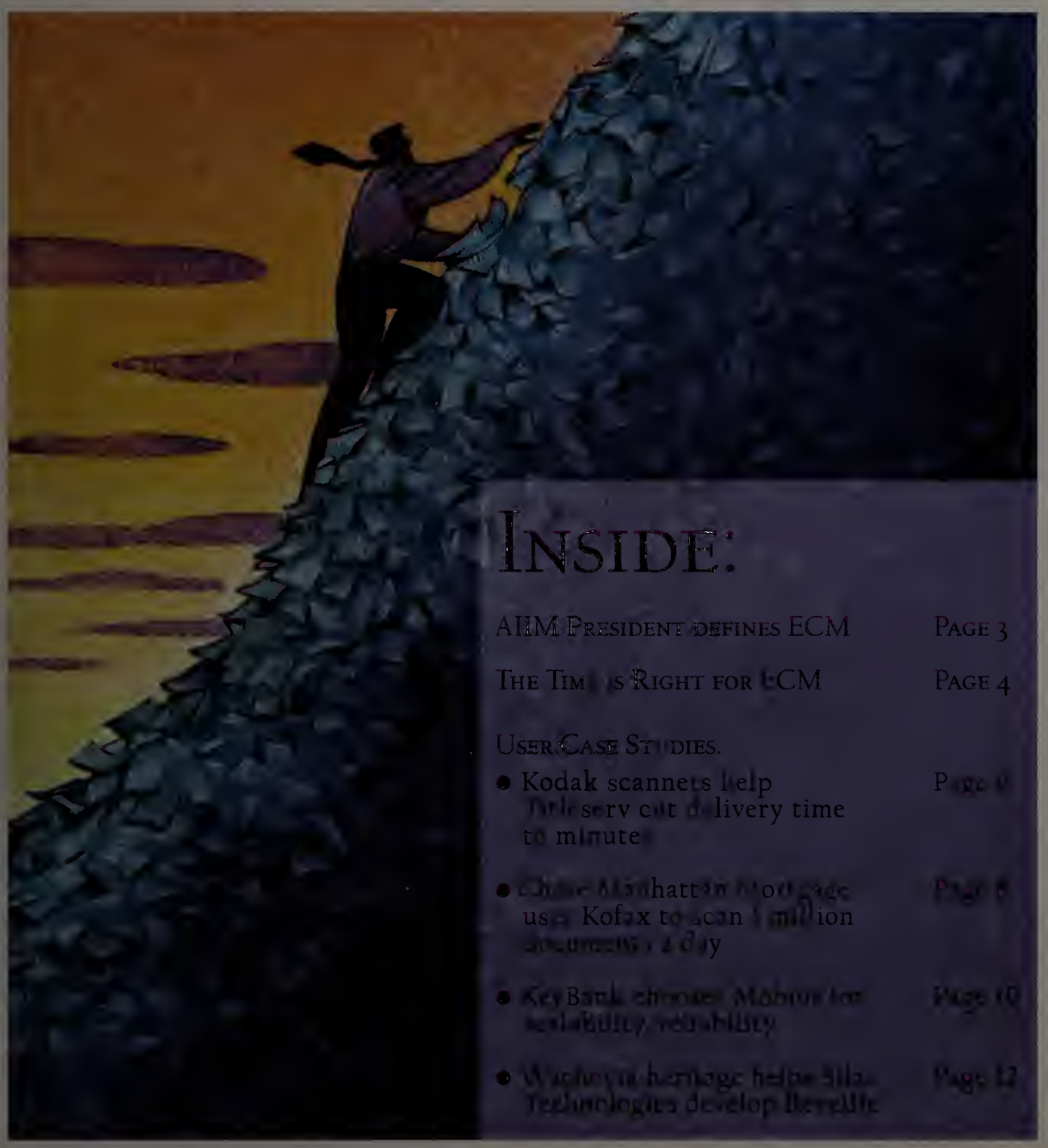

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- KeyBank chooses Mobius for scalability, reliability — Page 10
- Wachovia heritage helps Silas Technologies develop Revellie — Page 12

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The need for ECM

AIIM's President, John Mancini, explains why you need to redefine your business process to make ECM a reality

Recently I was asked to introduce myself at an IT executive breakfast. As I sipped my coffee, my mind began to race — "Hi, I'm John Mancini, President of AIIM International, the Enterprise Content Management Association . . ." And then it hit me — how can anyone quickly explain ECM?

At the risk of oversimplification, I'll try it in one sentence. At the basic level, Enterprise Content Management (ECM) tools allow the management of an organization's unstructured information, wherever that information exists.

This supplement will cover that concept and explain, in more detail, the key technologies, applications and suppliers.

AIIM believes that ECM — the technologies used to create, capture, customize, deliver and manage unstructured content related to business processes — reflects the enormity of the next wave of IT challenges. ECM speaks to the heart of business — the business process.

In the beginning of the Web revolution, users had questions such as: "How do I use the Web to create greater leverage and visibility for my printed materials?" Given the infancy of the technology, this was a daunting challenge. However, once users migrated to the next question in the Web revolution — "How do I use the Web to redefine my core business processes?" — the complexity of the challenge facing users exploded.

Suddenly customers were interacting with suppliers and with each other in unanticipated new ways. The volume of unstructured content surrounding transactions grew exponentially, as did its importance.

In failing to fully think strategically about the implications of the Internet on the management of content — especially unstructured content — many organizations found that their processes were more complicated. In truly redefining their processes to take advantage of the Web, users are now faced with the following ECM challenges:

- How much content is there and how much will it grow?
- How many types and classifications of information content are there?
- Who manages which content?
- Who owns the content?
- What is the life cycle of the content?
- How does content get re-purposed?
- What are the standards?
- How do you optimize your content management strategies for sharing of information?
- How does information and document repositories interoperate with applications?
- How do you document the context in which a Web transaction takes place?

Along the way to Dotcomville, many businesses, associations and analysts were sidetracked by the possibility of creating new business models on the Web. The cry was "How do I take my business to the Web?" We now know that this missed the point. The real question we should have asked was "How do I bring the Web into my business?" This is the heart of what ECM is all about.

The time is right for ECM

IT managers are realizing the benefits of an enterprise content management solution strategy

The time is right to adopt an Enterprise Content Management strategy. IT managers, who face tough decisions about where to get the biggest bang for their budget buck, are realizing that ECM has a major impact on the bottom line. In fact, a recent study by the Association for Information and Image Management International (AIIM) and Gartner Inc. found the drivers behind ECM are shifting. There was a time when enterprises invested in ECM infrastructure to cut costs and streamline back-office processes. Today, businesses view ECM as a customer-facing tool that can boost revenue.

DEFINING ECM

What is ECM? It's a strategy for capturing, customizing, delivering and managing the ever-growing torrent of content that is critical to today's business.

John Dalton, an analyst at Cambridge, Mass.-based Forrester Research Inc., says it's astonishing how the ECM field has exploded recently. It wasn't too long ago, he says, that corporate webmasters were handling a manageable 1,500 pages or more of content. But "we recently interviewed 50 webmasters, and they had an average of 75,000 pages to manage," Dalton says. "People are drowning."

This supplement will show you how an ECM strategy can be a lifesaver for your organization. This paper will provide you with valuable information on the following three key areas of ECM and it will show you how to apply them in an ECM strategy:

1. Create and Capture
2. Customize and Deliver
3. Manage

1. CREATE AND CAPTURE

Data capture is often paid little mind in the enterprise, but that's changing as IT managers are confronted with tighter budgets. Technologists are waking up to the fact that a fully integrated data- and image-capturing strategy can save money and, through such measures as indexing and tagging content while it is being captured, open up new possibilities for the use of that content later on.

Some IT departments may be tempted to ignore content capture and move on to sexier elements of ECM, but that's a mistake.

David Oldfield, a senior product manager at Irvine, Calif.-based Kofax Image Products, points out that some of the quickest, and most dramatic, return on investment can be found in the capturing process. (See sidebar page 8).

"There's a movement to avoid paper, but in all large enterprises there remains a repository of old paper-based information," Oldfield says. "So the ability to merge paper-based content into new electronic systems, or to be able to add paper from files as needed, is where the capture process plays a role."

The hardware and software that make data capture possible are relatively inexpensive, but labor is not. And on a large scale, data capture is not simply a matter of a scanner and PC software — it's an intricate ballet that involves document preparation, scanning, recognition, indexing and data validation, quality control/rescanning and release.

Each part of the process involves varying amounts of labor. The less labor, the more cost-efficient the process. Moreover, poor data capture has many hard-to-predict ramifications throughout the information life cycle — both internal users and customers need to know that the information they're working with is consistently accurate.

In an effort to help businesses reduce cost, vendors in this market are pushing the envelope. For example, in an effort to reduce the number of documents that must be rescanned, Kofax recently rolled out Virtual ReScan (VRS), which instantly checks and adjusts images' alignment, brightness, contrast and clarity — and corrects problems on the fly. "That's a significant improvement," says Susan Moyse, an imaging consultant at Boston-based Infotrends. "You're saving a lot of time and effort" by reducing rescans.

Optical Character Recognition, or OCR, is simply a computer's ability to recognize printed or written text. The process involves scanning the text, analyzing the scanned-in image, and translating it into a computer-readable code such as ASCII.

When a company or department processes a large number of documents, forms recognition software is often more useful than mere OCR. Forms recognition software lets the user define what a form looks like, then performs OCR on individual fields, storing the information it pulls from those fields in a database.

These technologies play a key role in transitioning real-world businesses to the promised land of electronic content. "The advantages of using modern electronic systems are really clear," says Kofax's Oldfield. "The huge speed bump is, how do we get from where we are today to this new world? That's where data- and image-capture come in."

HR BENEFITS

Human resources departments, which must process large numbers of job applications, often benefit from forms processing. Increasingly, OCR and forms tracking are parts of a comprehensive applicant tracking software system, which lets enterprise HR organizations capture and maintain a database

About AIIM

AIIM International, a global, non-profit association, is proud to sponsor this ECM supplement and bring this information to you. For AIIM, this is just the latest step on a 50-year path of delivering information to users on how to effectively use technology to address their business challenges – from micrographics to ECM. There isn't anywhere else that you can get the breadth of perspective that AIIM brings.

AIIM programs include standards, publications, and educational events. As a 50-year community of users and suppliers, AIIM is dedicated to educating and growing the content and document management industry. You can reach us on the Web at www.aiim.org.

AIIM International
The Enterprise Content Management Association
1100 Wayne Avenue, Suite 1100
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E-mail: www.aiim.org

of applicant and job information. Such data is useful for matching applicants to job openings — the value of applicant information increases when it's stored and retrieved electronically.

Full-featured applicant tracking systems include OCR resume scanning and forms processing, the ability to create letters, interview tracking, job descriptions, applicant profiles and more.

The stunning growth of Las Vegas has prompted human resources departments in that city's hospitality industry to implement cutting-edge strategies where job applications are concerned. Hotel human resources staffs process, on average, seven to 10 documents per employee per year.

Bellagio, owned by MGM Mirage, has turned to electronic document and data capture technology to manage the hiring boom. The hotel recently implemented Kofax's Ascent Capture to create a paperless human resources solution.

When it opened in 1998, Bellagio needed to hire 10,000 employees. The hotel's human resources team chose to implement an electronic filing system that harnesses content capture and management technology. In so doing, human resources enabled hotel executives to access employee files to add notes or reference employee information.

The solution: FileNET's Panagon Content Services paired with Kofax Ascent Capture software and Fujitsu scanners. The Kofax-FileNET combo converts and stores hard-copy documents in a central database, which can be accessed via the corporate intranet.

MGM Mirage is impressed, to say the least. "We now can offer management access to employee files 24/7 via the corporate intranet," says Marilyn Mattick, Bellagio's director of compensation. "This significantly cuts down on the time and effort it used to take using paper-based methods."

To date, the system — which has been

Turnaround

Kodak scanners help Titleserv cut delivery time to minutes

Two years ago, Titleserv — a Plainview, N.Y.-based title insurance agency — found its growth slowed by the cost and limits of hard-copy storage and retrieval.

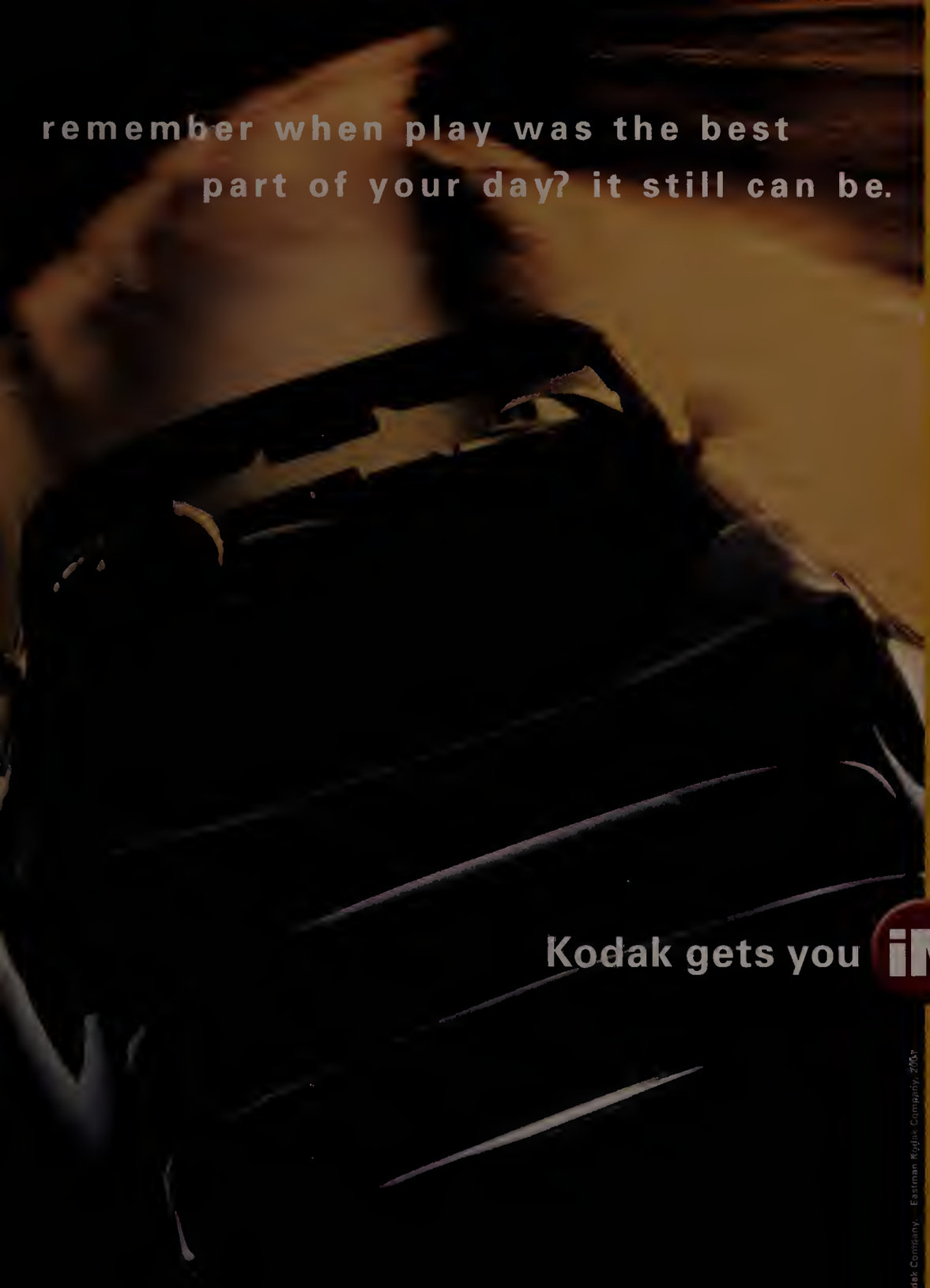
Titleserv employees duplicated documents on a black-and-white photocopy machine, placed them in folders and sent them to a warehouse. The result: delays when such customers as the Bank of New York and Chase Bank needed access to the documents. Turnaround time was five to 14 days. And because the original documents were often low-quality, it was difficult to make useful copies.

To help solve these problems, Titleserv purchased two Kodak Digital Science 3590C Color Scanners and MVCS Software from Eastman-Kodak Co.

Titleserv senior technical analyst George Sakellaris says the company sought color scanners because that could make the difference between a useable image and a useless one. Sakellaris, CEO James Conway and CIO Thomas Murphy were all part of the team that chose the Kodak solution.

Documents can now be called from any workstation in any of Titleserv's three offices — a far cry from hard-copy warehouse storage. And the Kodak scanners have reduced turnaround time to a matter of minutes. Clients now receive their documents electronically — via e-mail or Web.

As for reliability, Sakellaris marvels, "The Kodak scanners have been in operation over two years, running 24/7, and they've required only occasional cleaning and lamp replacement."



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CASTING A WIDE NET

Of course, scanning hard-copy is only one facet of content capture. "When people talk about data capture, there's more than just forms and hard-copy to be concerned about," says Infotrends' Moyse. "You've got electronic data, Web data — enterprises are taking all these different types of data and figuring out how to integrate and manage them."

Vendors are offering IT more ways to capture data that's spread across a wide range of applications and servers. Acorde Client, part of the Acorde Context suite from Colorado Springs-based Optika Inc., is one such tool. Acorde Client lets users capture and access transaction data, regardless of the application in which it was created, from a single user interface.

2. CUSTOMIZE AND DELIVER

Once an enterprise has gathered and indexed content, the next crucial component of ECM is customization and delivery.

It is a given that XML, the data-description language that is rapidly growing indispensable in business, will play a major role in the future of ECM; XML's ability to describe context is tailor-made for content management, experts say, allowing systems to exchange content — and even take action on that content so that, for instance, a supplier could automatically ship a customer new product when the customer's system informs the supplier's system that its inventory has dropped below a certain point. This type of automated trading has long been a supply-chain ideal, and according to experts, XML is the technology that can make it happen.

ECM vendors offer a burgeoning list of tools designed to help enterprises make their legacy

Image Is Everything

Chase Manhattan Mortgage uses Kofax to scan 1 million documents a day

In 1992, Chase Manhattan Mortgage developed a document-management system to support the Columbus, Ohio-based company's loan default division. The system was state-of-the-art at the time because it recognized handwriting. However, it lacked image cleanup, which led to error rates as high as 50%, according to Rick Duff, Chase Manhattan Mortgage's senior technical officer. Those errors required time-consuming manual intervention.

The company chose Kofax Ascent Capture software and Adrenaline hardware and software. Ascent Capture lets users verify scanned and electronic documents; validate the extracted data; index it and send it to a content management system. Adrenaline, Kofax's high-speed document scanner enhancement engines, offer color image processing and barcode recognition.

Duff says flexibility was a key factor behind the choice to go with Kofax. "We needed flexibility between ICR, barcode recognition and the ability to read different types of documents," he says.

According to Duff, the solution provides image cleanup, and Kofax's barcode recognition technology lets Chase Manhattan Mortgage automatically index the documents.

Chase Manhattan Mortgage is now scanning about 1 million documents per day. According to Duff, scanning costs have been cut from 10 cents to 6 cents per page. And the error rate has dropped "down in the half-a-percent range."

content XML-ready. One crucial early step is to analyze company data and develop Data Type Definitions (DTD), which entails analyzing information requirements; showing relationships between information types; translating these relationships into DTDs; and finally creating those DTDs.

> DATA SECURITY AND PRIVACY ARE THORNY ISSUES FOR BOTH USERS AND VENDORS OF ECM PRODUCTS. A RECENT ABERDEEN GROUP REPORT STATES THAT "GIVEN THE VARIETY OF USERS AND SYSTEMS THAT WORK WITH THE CONTENT MANAGEMENT SYSTEM — AS WELL AS THE IMPORTANCE OF THE CONTENT — GOOD SECURITY IS MANDATORY."

Near & Far Designer, from Ontario, Canada-based Open Text Corp., is an XML modeling and authoring tool that automates the DTD creation process, slashing the time required to create an effective content management system. Like many XML tools, Near & Far Designer requires no understanding of XML syntax — any employee can use it.

In April, AIIM International announced an XML initiative that will standardize the exchange of image documents. The standard will focus on the ways image documents and their metadata are shared, stored, retrieved and distributed. Today, XML doesn't support such binary data formats as image files; AIIM's goal is to eliminate the need to convert image formats from other nonstandard formats. Speeding the corporate adoption of the XML standard is a key goal of AIIM and its members. Large enterprises tend to have entrenched legacy publishing processes, and while IT managers understand the massive gains promised by XML, changing those processes can be difficult.

Today, demanding customers insist on customized content; personalization is one of the hot topics in e-business. Analysts say the key to creating interest and loyalty is to create a targeted, personalized community that anticipates users' needs and interests. Studies indicate that customers will return to a site if they find accurate information targeted at them. Companies such as BroadVision Inc., headquartered in Redwood City, Calif., and Heathrow, Fla.-based Cytura Corp. allow content to be personalized to an extent never before possible. Cytura's Extreme Personalization suite actually lets non-technical business users personalize content right down to the word level.

INSURING SUCCESS

W.R. Berkley Corp., an insurance holding company headquartered in Greenwich, Conn., recently used VeniceBridge, a content-delivery application from Charlotte, N.C.-based Venetica, to create a portal for its 4,000 independent insurance agents and brokers.

VeniceBridge enabled W.R. Berkley to provide its agents, who are located throughout the nation, with a single interface to access docu-

ments, images and other content. For the first time, agents can retrieve images, photos, documents, policy forms and correspondence — even when they're stored in multiple physical locations and repositories. Harry Berkley, vice-president of IT at W. R. Berkley, says the company has high hopes for the new system. "We needed to figure out a way to display images over the Internet — without forcing our independent agents to download viewers," he says. "VeniceBridge turns what could be a thick-client model into a thin-client model where our server does the bulk of the work."

W. R. Berkley hopes to address inefficiencies that are built into its legacy system — and which are familiar to any business. Without an enterprise content solution, Berkley says, "there's a lot of redundancy between the agents and the insurance company. He explains, "[the agents] will fill out an application and send it to us. So they have a copy and we have a copy. Then we issue a policy. A copy goes to the agent. Venetica eliminates a lot of paper."

Moreover, record-keeping is improved, as the agents and the insurance company always work from the same source. "[The agents] can access content from our database," Berkley says. "They can see what we've sent the insured, and vice versa." He calls it a triple-win: the insurance company and the agents benefit, but most importantly, customer service improves.

SECURITY

Data security and privacy are thorny issues for both users and vendors of ECM products. A recent Aberdeen Group report states that "given the variety of users and systems that work with the content management system — as well as the importance of the content — good security is mandatory."

In order to reassure customers, most enterprises are treading cautiously — actually protecting data more carefully than the laws say

A View to a Thrill

KeyBank chooses Mobius for scalability, reliability

Think your data-capture needs are tough? Try scanning about 5 million checks per day.

That's the bascline at KeyCorp, one of the largest financial services companies in the U.S. When Cleveland-based KeyCorp set out to select a content solution, the company knew what it wanted: "a system that could scale with our needs," says Bob Dutile, a senior vice-president in KeyBank's Technology Services division. "And we wanted advanced but reliable technology."

The choice: Mobius Management Systems' ViewDirect. "When you get down to it, this is Mobius' niche," says Allyn Pytel, KeyBank's senior vice-president of media output management.

KeyCorp will use ViewDirect to present, manage and distribute its enormous flow of data. Using a single data source, KeyBank will fulfill three missions, Pytel says: meeting strict regulatory requirements for storage, servicing customers via the call center, and, eventually, offering powerful self-service.

ViewDirect, Mobius' content server, captures, indexes and stores documents, reports and images from multiple applications and sources. DocumentDirect provides browser-based access to integrated ViewDirect content. Once images are indexed and stored, ViewDirect creates virtual folders of documents associated with a customer or transaction.

Pytel says, that had ViewDirect running in a production environment in less than two months "with very few problems."

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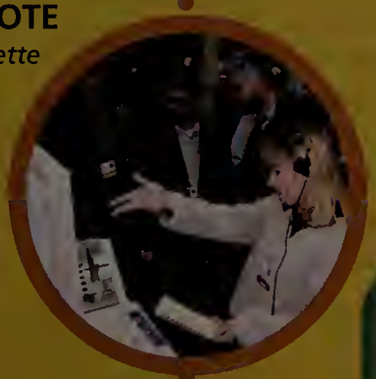

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they must. "We're very careful about privacy issues," says W.R. Berkley's Harry Berkley. "Our approach is to offer maximum security wherever possible. For example, on some claims, we don't even show our agents the names [on the insurance policies]; we'll show them summaries instead."

This diligence leads to some strange business rules. For example, if one of the independent agents who works with W.R. Berkley pays for a motor vehicle report (MVR) on a prospective customer, that agent is able to access the MVR any time. On the other hand, if the agent requests that W.R. Berkley obtain the MVR, he will be denied access. These are the types of strict guidelines facing enterprises as they implement ECM.

3. MANAGE

Just as the Internet has allowed businesses to rethink the potential and life cycle of content, it has also created new demands; enterprises must now make sure their content is useful online. Companies are capturing more data than ever, storing it in fewer databases, and trying to let more audiences do more with it. This makes managing that content more critical than ever.

The payback is indisputable: According to a recent report from Giga Information Group, Web content management can reduce maintenance costs by about 33%, reduce authoring and design costs by about 50%, and cut Web publishing IT-related costs by approximately 50%. And these savings are even more impressive when an enterprise pushes beyond Web content management and addresses its entire portfolio of content.

As the role of content management expands, it will come to include more sources, access methods and content types, experts say. Thus, they expect what has been known as Web content management to become ECM — which encompasses not only Web content, but

Hall Monitor

Wachovia heritage helps Silas Technologies develop Reveille

When software vendors use the same products they sell to others, it's called "eating your own dog food." What's it called when you create an application for in-house use, and it's so good you turn it into a product? To Silas Technologies Inc., the answer is simple: Reveille.

Based in Winston-Salem, N.C., Silas is a subsidiary of Wachovia Corp., a leading financial holding company.

"In 1997, Wachovia acquired Central Fidelity of Virginia," says Brian DeWyer, director of business process consulting at Silas. "There were hundreds of thousands of documents that had to be brought into a content-management environment. Some days, 200,000 pieces of paper were being scanned."

In a time-sensitive merger environment, DeWyer says it's especially important to "have customer information available on the merger date — so when the sign changes, customers feel comfortable and can get consistent information."

At the time, DeWyer headed the document-imaging and workflow group, and realized the need for a tool to monitor and manage its many applications.

This led to the development of Reveille, a real-time proactive application monitoring tool that does not use agents. The tool offers IT managers a comprehensive view of mission-critical applications and activities throughout the enterprise.

Reveille was such a success that Silas put it through rigorous development and testing to make it a product. Customers including Blue Cross and Blue Shield of South Carolina are now using Reveille.

any other content that is of interest to internal users, customers and trading partners.

No wonder a recent report from the Aberdeen Group points out: "As the engine that helps enterprises continually redefine themselves to their constituencies, the content management system has taken on a central role."

STORING IT ALL

Most enterprises devote enormous physical resources to hard-copy document storage. Source document images tend to come from external sources such as job applicants, customers or regulatory agencies, and they must often be stored for legal purposes or customer service needs.

Today, products such as Hyland Software's OnBase COLD (Computer Output to Laser Disk) eliminate the need for large storage areas and offer a long-term storage solution that's easily accessible. By removing or reducing the need for paper, microfilm and microfiche, such laser disk systems offer immediate ROI. Today, inexpensive electronic storage is more powerful than ever. For example, Panasonic offers DVD-RAM disks that boast read/write capacity of 2.6 GB — roughly 400% more capacity than a CD-ROM — on a single side.

Workflow — that is, moving content through necessary review and approval processes — requires a dynamic process model that can be understood and managed by any worker. Ideally, an ECM workflow lets multiple employees work with content in parallel, then automatically merges the results.

Some ECM tools, such as Rhythmyx Workflow from Stoneham, Mass.-based Percussion Software Inc. (whose flagship ECM product is called Rhythmyx Content Manager), manage each Web page element as a distinct content item with its own approval process. During review, all pages that use the item can be previewed — but only the item itself is actually approved. Once approved, it is automatically merged into all the pages that use it.

The Aberdeen Group report says that when IT managers shop for an ECM system, a robust workflow system is vital: "The system's workflow capabilities must match the enterprise's way of working," the report states. Aberdeen Group recommends a workflow system that offers serial, parallel and "voting" workflows. "Otherwise," the report points out, "the business will end up bending to the system, rather than the system conforming to the business."

One Holy Grail of ECM is peer-to-peer publishing — allowing business people to publish content with minimal interference. For Farmers Insurance Group, such a program came together late last year. Los Angeles-based Farmers, the third-largest home and auto insurer in the U.S., has both a consumer-oriented Web site, www.Farmers.com, and an extranet called Dashboard that serves its 17,000 independent agents.

FASTER PROCESS

As in many enterprises, Farmers' content-updating process used to be convoluted and time-consuming. In a typical scenario, a Farmers worker would create a change request

for the IT department, which would assign the change to a Web developer, who would do the actual modification and technical QA. The business user would then review and approve the change, which would only then be merged into the production environment. The process could take up to two weeks, according to Mike Binns, Farmers' vice-president of business and technology integration.

"We've cut at least a couple of weeks out of the time-to-Web cycle."

Mike Binns, vice-president of business and technology integration, Farmers Insurance Group

The quest for faster content updates led Farmers to Interwoven Inc., headquartered in Sunnyvale, Calif. "Our objective was to integrate TeamSite [Interwoven's XML-based content management platform] into both our extranet and our consumer site," Binns says.

After interviewing end users, Binns and his group decided to offer two ways to update content. For novice users, Farmers developed templates to make content updates as simple as possible; the user fills in the blanks on the template. He adds that "as we got users engaged in the project, we found varying skill sets; some people wanted to use our front-end tool [Macromedia's Dreamweaver] to create pages in their entirety and push them out. We let them do that and skip the templates."

Either way, TeamSite's workflow component then sends proposed changes to Farmers' Corporate Communications department for review, Binns says. The next stop is Quality Assurance, where links are tested and any typos are removed. "Once QA approves it, it's pushed out simultaneously to the production and failover environments," Binns says. Interwoven's DataDeploy recognizes what content has changed and synchronizes the change from the TeamSite repository to Farmers' database.

According to Binns, Interwoven has saved Farmers time and money by harnessing the expertise of the company's business users — while ensuring that the Web site and extranet meet Farmers' high quality standards, and that corporate databases stay consistent and up to date. "We've cut at least a couple of weeks out of the time-to-Web cycle," he says.

Farmers also redesigned its claims-processing network, using FileNET Corp.'s Panagon integrated document management software. Panagon enhances agent productivity and customer satisfaction by providing a single contact point for 14 million Farmers customers.

Panagon allows claims personnel to capture, access, manage and integrate information with front-office applications from Siebel Systems, a FileNET strategic partner. Panagon lets Farmers manage virtually any data type — HTML/XML pages, e-mail, PDF files, graphics and audio or video objects — and deliver it to every desktop via Web browsers.

THE BOTTOM LINE

Experts say that with the benefits of ECM so clear, it's no wonder the field is taking off. According to Forrester Research's Dalton, when it comes to ECM's return on investment, "the story is pretty clear. It absolutely works. People are looking at content management because they say, 'It takes us four days to change a logo on a Web page, and we know we can do it in two minutes.' The productivity argument is a no-brainer."

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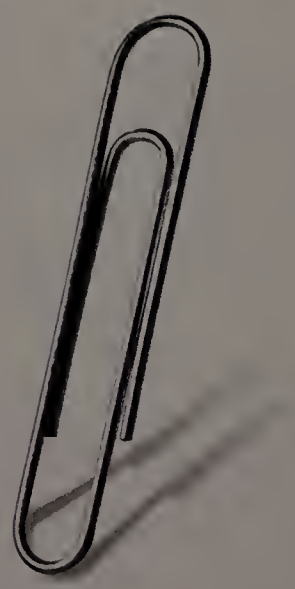

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KOFAX

KATHLEEN MELYMUKA/DIVERSITY

A Different View of IT Discrimination

AMID THE FLOOD OF RESPONSES to a recent column about gays in the IT labor force, Tom, an IT worker at a financial institution in Pittsburgh, raised an issue that I felt compelled to pass along. It began with a long letter, paraphrasing my column by inserting "another less-protected minority" — Christians — in the place of "gay."

Tom's point was that Christians — in the sense of very devout, Bible-centered believers in Jesus — often must hide their true selves at work in order to escape ridicule and marginalization.

Tom ended with this: "Perhaps your next article could focus on the persecution Christians get in the workplace from hatemongers who want to silence their beliefs. It would go a long way to teaching tolerance for other points of view."

I had never heard of Christians being persecuted in an IT work environment and asked to hear more. Tom's response (edited for space) follows:

I'll give you my own experience as a Christian IT worker which, while anecdotal, is not uncommon.

I've been vilified by upper management for not attending the annual drunken bash — a.k.a. holiday awards dinner — a choice that has kept me from advancing to the executive ranks. I've been criticized by the same management, and by co-workers, for not attending group outings during Sunday service times. I've been ridiculed by co-workers and outside vendors for ordering water when they ordered beer and for not attending "business luncheons" at "gentlemen's clubs." I've been subjected to off-color jokes, morally offensive information and pornographic literature from others who stereotype male IT workers as sexually starved adolescents who just can't get enough.

This was an eye-opener for me. Granted, Tom's workplace doesn't sound like your everyday financial institution. I'm sure there are many others who, regardless of their religious beliefs, would be appalled by the environment he describes.

But I wonder how many other Toms out there are subjected to subtle workplace discrimination because of deeply held religious beliefs. I wonder how many of us might champion the rights of various minorities while stereotyping our straight-laced Christian coworkers.

And that brings up a crucial distinction that Tom was careful to make. "It's important to distinguish Christianity from the so-called Religious Right," he wrote. "As the legendary record producer Phil Spector quips, 'They are neither.' Don't confuse us with the likes of Rush Limbaugh, Newt Gingrich or Pat Robertson."

KATHLEEN MELYMUKA is a *Computerworld* feature writer. Contact her at kathleen_melymuka@computerworld.com.

This was a point well taken. I cringe when a drug dealer turns out to be black or a welfare cheat turns out to be Hispanic or a pedophile turns out to be gay because I just know those few rotten apples will be seized upon by bigots to further their hateful arguments.

But I hadn't thought about how the hate- and fearmongers of the Religious Right have the same effect on the image of real Christians — those whose most basic tenet is to love their neighbors. To the extent that members of the Religious Right are intolerant, they forfeit the right to our tolerance, but true Christians shouldn't suffer for their sins.

"We're the invisible ones," Tom explained. "Wise as serpents, harmless as doves."

And I can attest to that. My family has a small but mighty contingent of Bible-carrying, teetotaling, hymn-singing, witness-giving Methodists on my father's side, and they are among the finest, funniest, kindest, most open-minded and most tolerant people I know.

Of course, workers uncomfortable with their environments can always vote with their feet. Eventually, market forces will convince the management of hellholes like Tom's company that if they want to retain talented people, they'd better offer a more humane workplace.

But "if you can't stand the heat, get out of the kitchen" isn't a practical solution for IT workers in an economic downturn. Market forces take time, and people have to eat today. Why not just turn down the heat so everyone can stay?

Tom and I disagreed on a lot of things, but we did agree that our correspondence was interesting, enlightening, respectful and fun. Doesn't he have a right to expect that same kind of interaction at his job? ◗

BRIEF

Security Directors Needed

In an announcement that was much more prophetic than it had realized, John J. Davis & Associates Inc., a New York-based search firm specializing in IT management, recently cited information security as the new top corporate post that companies most need.

In a press release issued just prior to last week's deadly hijackings, John Davis, the firm's president, said, "Security was once a below-the-radar issue, but more companies have elevated the job to the senior level because of growing exposure to the Web and concerns over privacy and hacking."

The demand for a top IT security director is coming from the corporate board level in most cases, Davis explained. "So many issues seem to converge, not just hacking or government regulation, but also protection of data integrity, potential for industrial espionage or even [the] threat of terrorism," he said.

A chief of information security can earn $250,000 or more per year, according to Davis. Candidates are expected to have a broad set of skills and qualifications.

Expertise in cyberlaw and vendor analysis and a professional certification from the Framingham, Mass.-based International Information Systems Security Certification Consortium Inc. are often required. Communications and business skills are also critical. This is especially important if the candidate isn't an internal promotion, said Davis.

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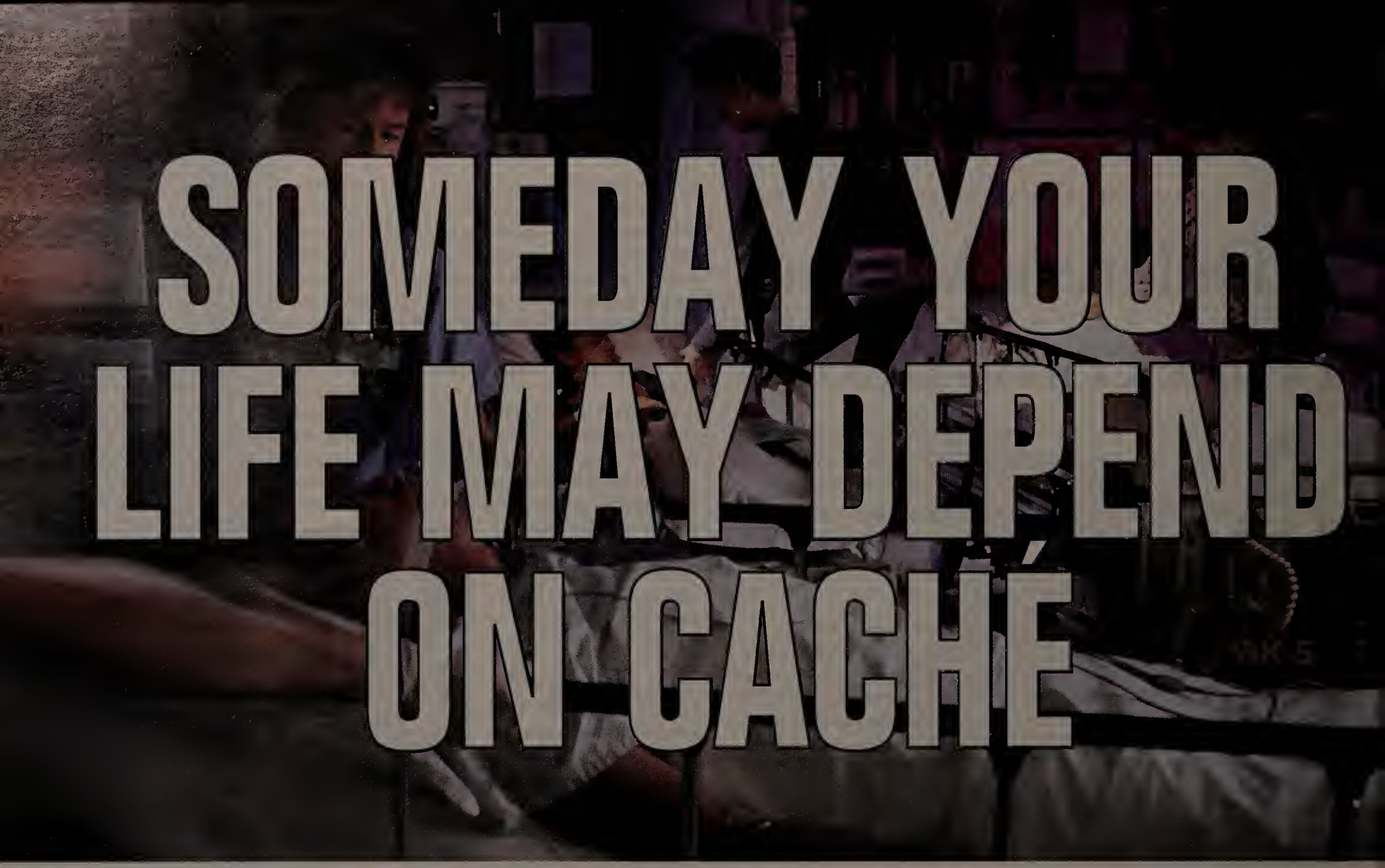

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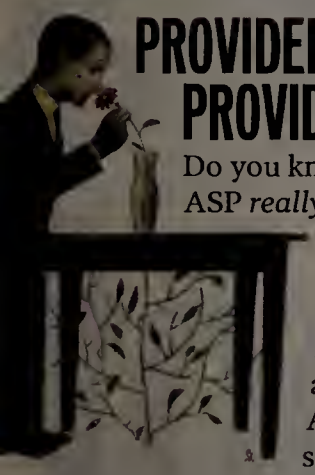
THIS WEEK



PROVIDERS BEHIND PROVIDERS

Do you know who your ASP *really* is? You should have a full understanding of the back-end relationships among your ASP and other service providers before you sign on, practitioners say. **PAGE 48**

FUTURE WATCH

Compilers are moving beyond traditional functions and are getting smarter at code optimization. Just-in-time compilers find the quick, big payoff optimizations while not bothering with code that's rarely executed. **PAGE 54**

QUICKSTUDY

A Web service is a self-contained, modular application that's available for use by other applications over the Internet. Web services use standard, XML-based protocols for identification, description and communication. The roles these applications play can range from fulfilling simple requests to coordinating complicated business processes. Find out more in this week's primer. **PAGE 56**

SECURITY JOURNAL

Setting up a mobile remote office presents a raft of wireless security challenges. The technical hurdles are surmountable, but getting users to live within the restrictions is another matter. **PAGE 57**

NICHOLAS PETRELEY

Linux Road Map Needed

STANDARDS DRIVE THE MARKET. That's a truism if ever there was one. But that doesn't make it a simple truth. There are de facto standards, closed standards, open standards and lots of gray areas in between.

Linux adoption is still growing at a remarkable pace, considering the state of the economy (or perhaps because of it). But the lack of Linux standards, de facto or otherwise, is preventing the operating system from reaching its full potential.

That's where the Linux Standard Base (LSB), a nonprofit standards organization blessed by Linux creator Linus Torvalds, is supposed to come to the rescue. LSB moved at a glacial pace for years, but it recently picked up speed when Scott McNeil took over the reins. Now executive director of the Free Standards Group, paid by IBM as an artist in residence, McNeil is no stranger to Linux, having paid his dues as president of SuSE Linux and in various roles at VA Linux.

McNeil knows that I had pretty much written off LSB as irrelevant, so he recently dragged me to a room full of representatives from companies like Hewlett-Packard and Sun to convince me otherwise. I left both encouraged and disappointed.

Before I explain, let me put to rest the common myth about why LSB needs to exist. Linux isn't in danger of splintering into incompatible versions the way Unix did. I could explain why the market dynamics that forked Unix in the past no longer apply. But here's a simpler answer: The Linux kernel source code supports almost every platform imaginable by default. IBM, Sun and others controlled their own versions of Unix for their hardware. Linux runs on their hardware whether they like it or not.

It's no secret that Linux distributions like Red Hat and Caldera have incompatibilities. But the differences are more like those between Windows NT and Windows 2000 than those between Solaris and HP-UX. That's important to understand because people who tend to predict Linux fragmentation usually do so against the backdrop of Microsoft Windows. But the idea that Windows is a consistent standard seems downright silly, even if you're a Windows fan. Not only do some applications require specific versions of Windows, some programs won't even install on the target version of Windows until you have installed the latest service pack.

But although Windows is neither a consistent nor open standard, it's certainly the de facto standard, at least on the desktop. That's why LSB needs to exist. Independent software vendors (ISV) and developers aren't so stupid as to think Windows will free them from compatibility issues. Windows simply has enough market share to motivate developers and ISVs to deal with the incompatibilities. Linux doesn't have that luxury. As a result, ISVs either refuse to develop for Linux or they pick one or two distributions to support until LSB solves the problems.

This is where I get to the good news. After years of delays, LSB has finally produced a 1.0 specification. LSB is also making great strides with internationalization standards. The potential for a global customer base really sweetens the pot for ISVs. Sadly, LSB 1.0 isn't even close to being as comprehensive a standard as it should be.

But I am impressed by the enthusiastic support by the likes of HP, IBM and Sun to keep things moving. I was especially intrigued to find that HP is intensely interested in helping LSB give Linux the credibility it needs to become the de facto standard server operating system for 64-bit Intel platforms. I learned this before the HP/Compaq merger, so it will be interesting to see if this goal was conceived in anticipation of the merger, or if the merger changes it.

Unfortunately, too few people in the room understood that they need to start thinking more like Microsoft. LSB needs to generate confidence by announcing a long-term road map with specifics about things like directory services and desktop standards that ISVs can start planning to support.

Granted, Microsoft can get IT departments to revise their budgets without producing anything more substantial than a press release. LSB doesn't have that kind of clout. But these Linux supporters gave me the impression they were afraid to create a detailed road map, let alone announce one. Suck it up, guys. You can always adjust the specifics as needed. But don't expect anyone to support your plans if you don't make any. ◗

NICHOLAS PETRELEY, a computer consultant and writer in Hayward, Calif., is the founding editor of VarLinux.org (*www.varlinux.org*). Reach him at **nicholas@petreley.com**.

Hidden xSPs Take Root

Understanding what services your ASP outsources, and to whom, can help avert misunderstandings — or worse. By James Cope

GERARD DUBOIS

CIO FRED JOHNSON oversees FTD.com Inc.'s floral delivery e-commerce site from his office in Downers Grove, Ill., but you won't find his Web servers there. Nor will you find them in Toronto, where FTD.com's application service provider (ASP), Novator Systems Ltd., designs the content for the site, uses its proprietary e-commerce applications to process orders and manages the network. FTD.com's Web servers actually run in a secure cage at a data center in Jersey City, N.J., operated by another service provider, Santa Clara, Calif.-based Exodus Communications Inc.

During the past three years, ASPs have moved from a simple Web hosting model, with a single Internet service provider's Web server at one end and a user's browser at the other, to a complex interconnected mesh of applications and services.

And the ASP with which you sign on may not be providing all of the services. Other providers often play a role in areas such as hardware infrastructure, network services, streaming media delivery and performance monitoring. So the ASP that hosts an en-

terprise's e-commerce Web site, for example, may actually be running it on another vendor's data center hardware and using yet another vendor's domain name services.

Companies that outsource need to know how all of those associations work, says Johnson. In the case of FTD.com, which is the online division of Florists' Transworld Delivery Inc. (FTD), the interrelationships can directly affect the bottom line.

The FTD.com system is complex and includes databases that hold pricing and product information, hosted e-commerce applications that process customer transactions, a back-end credit card verification system and a content-delivery network service that lightens the load on origin servers during peak periods. A single service-level agreement (SLA) with Novator helps manage the overall relationship, but if, for example, something goes wrong on Valentine's Day, no SLA can compensate for the lost revenue, Johnson says.

The larger ASPs are bringing many of these services under one roof, but even large ASPs use specialty service providers for things like streaming media, says Laurie Seymour, an analyst at IDC in Framingham, Mass.

And bigger may not be better if the ASP doesn't understand your business. Before signing on with any service provider, you should determine your primary service provider needs, advises Russ Lewis, executive vice president and CIO at GFInet Inc. in New York. Lewis, whose firm provides applications over the Internet for wholesale financial, energy and commodities traders, says he recently moved his online systems from Exodus to Metromedia Fiber Network Inc. (MFN) in White Plains, N.Y., because he felt the latter company was better equipped to manage GFInet's applications.

But while MFN has the optical network infrastructure to support the network, it manages GFInet's applications through managed service provider SiteSmith, which MFN acquired in February and operates as a separate business unit in Santa Clara.

Many xSPs, One SLA

Johnson turned over management of FTD's e-commerce applications, content-delivery network and performance measurement to Novator and established one SLA. Now, FTD.com has "one throat to choke" when something goes wrong, according to Seymour.

But Johnson doesn't think of the relationship in those terms. Over time, Novator has won his trust by helping him build a site that turns a profit and that on Valentine's Day this year was the fastest home page of any floral retailer on the Internet.

To make sure it can keep its promises to FTD.com, Novator has its own SLA with Exodus. Novator is also responsible for the content delivery services provided by Akamai Technologies Inc. in Cambridge, Mass., that FTD.com had once handled directly. Novator also has an SLA with Gomez Inc. in Waltham, Mass., to monitor FTD.com's network performance.

Johnson says it's simply more efficient to have Novator manage everything, although FTD.com could have used a large provider like Exodus to provide similar services.

"We provide [to FTD.com] a percentage of availability for the entire site," says Novator CEO Mark Fox. That service, he notes, includes applications on Novator-owned servers located in cages at the Exodus data center, as well as the caching service provided by Akamai.

Credit card verification and transmission of orders to FTD florists is handled by back-end systems at FTD.com's offices in Chicago, Johnson explains. Orders that come in over the FTD.com Web site, he says, are fulfilled by FTD florists, who receive order notification through FTD-licensed floral shops over a private network, which started as a wire service in 1970.

Johnson says that with millions of dollars in sales per day on the line, anything less than stellar performance from every xSP involved in the FTD.com site is unacceptable.

Johnson remains unshaken by the financial problems that have plagued Exodus, which houses FTD.com's e-commerce servers — but he's prepared for the worst. "I'm not worried [about Exodus]," Johnson says, but he adds that he's ready to "compensate," should a problem arise.

Growing Complexity Creates Concern

The increasing complexity and interrelationships of hosted application services, whether they come from a single provider or multiple xSPs, strike fear into the hearts of IT managers, says Mark Shull, president and CEO of managed service provider Digex Inc. in Beltsville, Md. More applications and more providers mean there are more things to go wrong, he says.

And while each application may have 99.9% availability, Shull says, that doesn't necessarily translate into the same level of availability when you have interdependent multiple applications, either from one provider or many.

Novator relies on redundant servers housed at Exodus to mitigate risk for FTD.com and its other customers. But that may not be enough. Fox says that by the end of this year, his firm plans to duplicate its server farm at the data center of another provider "for a variety of reasons."

But redundancy is important, says Seymour. Adding another provider and duplicating hardware and applications across the data centers of multiple providers guarantee that if one firm has a sudden problem, business can go on as usual.

Choosing to send your applications out for someone else to host and manage "is still a scary proposition," Lewis acknowledges. To allay those fears, he recommends that companies conduct due diligence for any xSP relationship, including any that may hide behind a single SLA.

Lewis further advises that companies "look toward the bigger players; be interested in their balance sheets and who their backers are, who their customers are."

He also recommends avoiding small Internet hosting companies that say they can host mission-critical applications. If you did that, Lewis says, "you probably got hurt."

Quick Link

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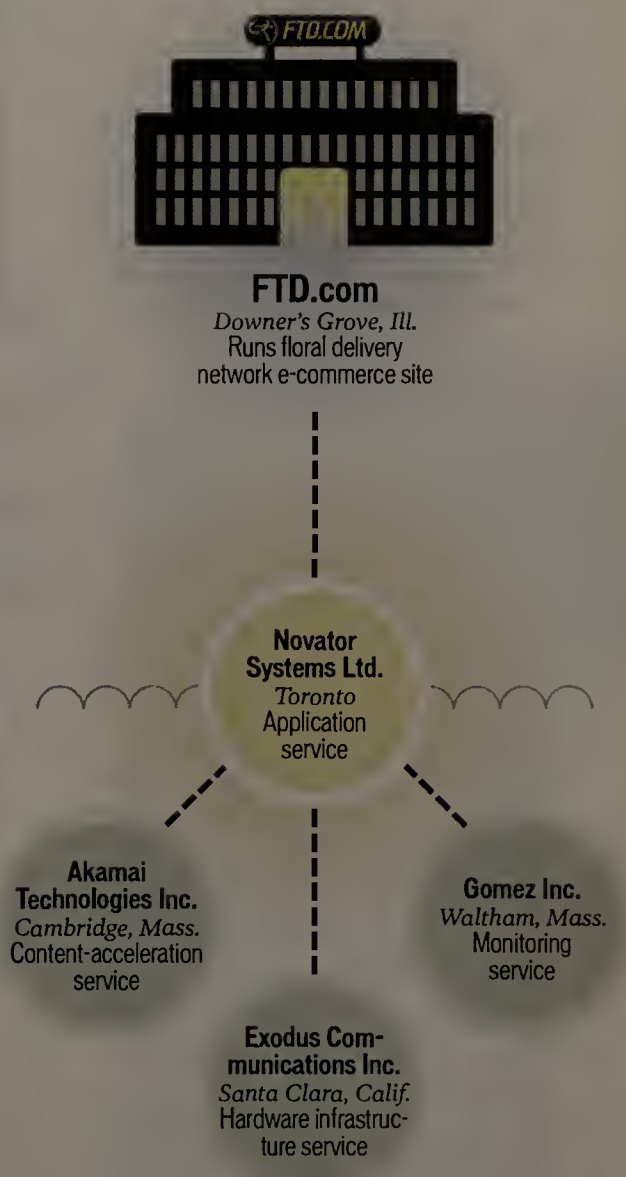
Who's Behind The Curtain?

FTD.com has an agreement with ASP Novator, which in turn has back-end agreements with other xSPs to provide hardware infrastructure, content-delivery acceleration and performance-monitoring services.



Dealing With xSP Relationships

- Ask your ASP to identify all back-end xSP relationships.
- Ask whether the ASP has back-end SLAs with those service providers.
- Exercise due diligence: Check out xSP balance sheets, investors and the scale of operations.
- For critical sites, duplicate server farms can reduce reliance on a single service provider.
- Consider including management of niche service providers, such as content-delivery network services, into a master SLA with your lead service provider.

Server Size Matters

Small 1U and 2U rack-mounted servers increase processing density – and server blades push the envelope even further. By Edmund X. DeJesus

A TRADITIONAL SERVER rack holds 42 servers. The RLX System 324 rack from RLX Technologies Inc. holds 14 ServerBlade chassis units, each accommodating 24 ServerBlades, for a total of 336 servers per rack. Based on Transmeta's Crusoe CPU, the system also consumes 80% less power and generates less heat than a traditional system.

TRANSACTIONS PER SQUARE FOOT SOUNDS like a unit more suited to paper-and-pencil accountants than data centers. However, packing servers more densely into racks can increase the processing power that each rack and its floor space can provide. This server strategy makes sense for a variety of situations, but it comes with a few caveats to consider first.

New server strategies are supplanting traditional minirefrigerator-size pedestal servers and large, mainframe-style servers by taking advantage of rack mounting. Standard data center racks are 42U high (where U is a form factor measuring 1.75 in., with a standard PC "pizza box" base). Ordinary servers are usually 3U high, meaning a rack theoretically can hold 14 servers. However, by reducing server height to 2U or 1U, a rack can hold 21 or 42 servers — increasing the processing power by 50% to 100% in the same floor space. Data center managers value this increase, and indeed, 1U seems to be the new standard. Major server vendors, including Compaq Computer Corp., Dell Computer Corp., Hewlett-Packard Co. and IBM, all offer 1U servers.

These aren't skimpy boxes, either. Each 1U server can typically handle one or two processors in the Pentium to near-gigahertz range, up to 4GB of RAM, one to three 20GB hard drives, plus at least two network ports and all the trimmings. Slip 42 of these screamers into a rack, and you're packing a punch.

Naturally, the ability to shoehorn more computing power into a smaller space is one of the prime reasons for considering such ultraslim servers. Data center space is usually at a premium, so any way to make existing operations more compact is welcome. Also, data center space is expensive: The longer you can avoid renting more of it, the better. "This approach also supports incremental increases in server capacity, since you can add to existing racks as needed without large capital investment," says Marc Jourlait, director of Netserver business for North America at HP. Finally, it's easier for staffers to tend servers that aren't spread all over a building.

There are other considerations also. "Deploying tens or hundreds of 1U servers in clusters can give you the raw processing power of supercomputer-class machines for a fraction of the cost," says Subo Guha, director of marketing for the enterprise system group at Dell. Without the component bells and whistles of larger boxes, small form-factor servers may use less power, an important consideration lately. The hope is that racks of such servers will permit smaller staffs and save further data center costs.

Despite the undeniable benefits of compact rack-mounted servers, there are other considerations. One is power consumption. Although such servers are typically designed to minimize power consumption — and some companies design their offerings with low-power chip sets originally intended for handhelds and notebooks — there's no doubt that a rack holding 42 servers sucks down a lot of power. This may require rewiring the data center to handle the power needs more effectively. Indeed, depending on the original purpose of the data center space, it may require either upgrading the entire power supply or moving to a different facility.

A rack with 42 two-processor servers throws off a good bit of heat, which must be removed efficiently to prevent component degradation or burnout. This may require special air-conditioning arrangements, rack placement and elevated floors that harken back to glass-house days.

Storage is an interesting challenge, since you typically want each server to have access to whatever storage it may need. (The onboard hard disks are typically for internal needs only.) This will require some combination of direct-attached storage and attachment to storage-area

networks. Sorting out all the permutations and complexities may require automated software assistance.

One important consideration usually doesn't become apparent until you actually begin deploying many servers in a rack. With power lines, network connections, storage connections and all the other wiring necessary for 42 servers, each rack begins to look like an explosion in a cable factory. Keep this in mind when comparing servers, since some products may offer special cable-reducing features.

Flashing Blades

A new development in the compaction of servers is the appearance of blades. A blade is essentially a server mounted on a card within a special chassis or shell. The chassis typically provides power and some I/O connectivity in a 3U-high space. One blade can handle one or two processors, typically up to 512MB of RAM, up to three 20GB hard drives and one or two network connections. Since each chassis typically holds six to 12 blades, and each blade can handle up to two processors, standard racks can hold the equivalent of up to 336 servers. That's compact.

Fibercycle Networks Inc. in Los Gatos, Calif., and RLX Technologies Inc. in The Woodlands, Texas, are two of the pioneering vendors in the blade arena. However, most of the major vendors have blade offerings as well, or at least plans for them. Both Fibercycle and RLX use lower-power processors from Santa Clara, Calif.-based Transmeta Corp.

While blades clearly deliver even greater transaction densities than 1U servers, they can also multiply the challenges of deployment. The same considerations of power consumption, heat dissipation, storage connection, cable handling and management all apply, but to a vastly greater population of servers.

One approach to blade deployment is to expand the blade concept beyond servers. Blades dedicated to I/O or storage within the same chassis may dilute the raw processing power of a rack but provide for a more balanced and reasonable solution. "Dell is developing a 'brick' strategy, which would include consolidated access to storage in a more flexible chassis," says Guha. More sophisticated blade shells may also offer a consolidated power supply to reduce the number of heat sources, heat sensors to allocate cooling more efficiently and simple access to blades for dynamic reconfiguration or swapping.

Trends toward smaller form factors in rack-mounted servers are clear. As usual, it's the variations on the theme that are interesting. The 1U or 2U height is becoming the standard, and vendors will undoubtedly move to pack as many processors, hard drives, ports and other goodies into that space as possible. Refinements to reduce power consumption and handle heat will continue to advance, probably with different low-power chip sets and onboard fans and cooling technologies.

Other vendors, like Crystal Group Inc. in Hiawatha, Iowa, are introducing servers that vary in width and depth. The ability to pack three or four servers across and two deep in a 2U or 3U space may appeal to some managers. Look for further experimentation in the width and depth dimensions.

There's also a divergence between general-purpose servers and application-specific servers. For example, servers that are specialized for delivering

VENDORS LIKE CRYSTAL GROUP INC. are introducing servers of nonstandard widths or depths, such as the Crystal CS600 (above). The company hopes that servers of different sizes will appeal to managers with limited space.

Web pages are an obvious boon to Internet providers. Expect to see more specialized compact servers for particular niche applications, including files, printing, e-mail, enterprise resource planning, customer relationship management and database access.

Novel server form factors are also bringing new payment models. "HP was the first to introduce payment for what you use, rather than for what you have," says Jourlait. While you may have many servers in a rack to handle peak loads, you pay only for the processing you actually do. That allows an administrator to expand his data center incrementally and grow into the extra server capacity he has on hand. Versions of this model will probably become more widespread.

Compact servers are currently the hottest segment of the server market. "Growth for Dell in this segment was 600% in the past year," says Guha. A recent report from Framingham, Mass.-based IDC indicates that the market for appliance servers will grow from $3.8 billion last year to more than $30 billion by 2005.

Blade servers are poised to become the hottest segment of the compact server segment. The prime customers for these servers are, not surprisingly, service providers, which use them largely to serve Web pages. But major corporations aren't far behind.

"We see small to medium providers and midsize to large corporations that serve their own pages as prime users," says Jourlait. ◗

DeJesus is a freelance technical writer in Norwood, Mass. Contact him at dejesus@compuserve.com.

Quick Link Managing dense rack-mount servers requires administration software for server monitoring, load balancing and storage coordination. Read the story online: **www.computerworld.com/q?22289**

Ensuring Server Success

Joe Bartlett was facing the kind of nightmare that upper management calls a "challenge": He had to move AMS Services Inc. from zero to Internet-ready in two months. Windsor, Conn.-based AMS is a family of companies that provide automation products and services to more than 30,000 insurance agents and carriers. Bedford, N.H.-based TowerStreet, one part of AMS, offers online applications and business-to-business services on an application service provider basis. Bartlett, who is CIO and chief technology officer at AMS, had to ramp up server support, and he had only one 8,000-square-foot facility in College Station, Texas, to do it.

The first decision was to do the work in-house rather than turn to third-party providers. There just wasn't enough time to get an outside group on board fast enough.

Luckily, AMS already had virtual storage systems in place. "Pedestal-style servers would have been overkill, since we didn't need their storage," says Bartlett. Instead, AMS chose rack-mounted servers from HP. "We needed CPUs and RAM," notes Bartlett. Using 1U servers allowed AMS to maximize the number of servers per square foot of precious data center area. The company has settled mainly on HP's LP 1000r servers with dual 2-GHz processors and either 2GB (for Web processing) or 4GB (for terminal services for users) of RAM.

Of course, different enterprises have different needs. For example, Miami-based Primestream Corp. provides streaming audio and video via the Internet from facilities in Argentina, Brazil, Mexico and the U.S. Primestream serves both corporate clients (with training, seminars and earnings reports) and entertainment customers (with broadcasting that sidesteps traditional cable programming). The key statistic for Primestream is its number of simultaneous users.

"We used to support 500 connections with three racks," reports CEO Claudio Lisman. "Now we can support 1,500 connections with one rack." The server configuration is vital to this capability. Primestream uses Compaq Proliant DL360s with dual 36GB hard drives, dual 900-MHz Pentium III processors and 512MB of RAM. Those separate on-board drives are logically clustered so that they appear as a single 720GB drive to all servers in the rack.

The Jockey Club in Lexington, Ky., also has unique needs: It supports a huge database of registered racehorses, maintains a Web site for owners and traders to manage portfolios of holdings and handles financial transactions.

"Our rack-mounted servers provide the middle tier of architecture," says Bobby Burch, vice president of IT. "The front end is browser-based, while the back end includes the database on another platform." Such a combination of applications uses a mix of Dell server configurations, including both one- and two-processor boxes, with 2GB to 4GB of RAM each. Storage resides centrally in a storage-area network.

As far as power needed to support rack servers, the AMS data center already had sufficient infrastructure. "We have a sophisticated dual power grid to each rack," Bartlett says. Ventilation was something of an issue, however. While air conditioning was adequate overall and each server has its own fan system, there was concern about whether enough air was flowing through the racks. The solution was to install extra fan units at both the top and bottom of each rack to increase circulation. The club has also taken great care with the cabling, using bundled, color-coded cables to avoid confusion about the many connections among servers, storage, external I/O and administration.

To administer all those servers, the AMS data center uses HP's OpenView software to monitor everything pingable. The main parameters watched are processor and RAM usage levels. As is common in such situations, there is no overarching administration software to supervise both servers and storage: The storage management software is separate.

Burch's strategy is to consolidate more servers, if possible. "We'd like to get several applications on one box, while preserving reliability for the user," he notes. Lisman plans to expand the number of Primestream's servers from 50 to 300. Bartlett continues to add about 50 servers per month to the existing facility, so he appreciates the modularity of the rack-mounted servers, he says. "It's extremely scalable," Bartlett observes. "We call it LOLB: lots of little boxes."

This solution is anticipated to allow the AMS data center to continue in the original facility for two to three more years. "We have at least that long before we'll have to knock down any walls," Bartlett says.

– Edmund X. DeJesus

Resolving Windows Insecurities

WHO IS HE?

Microsoft's security guru **Steve Lipner** takes the heat on Code Red and explains the company's initiatives to improve product security.

◂**Steve Lipner** *is the lead program manager of Windows security at Microsoft Corp. He's responsible for Microsoft's Security Response Center, and he's chief of the company's Secure Windows Initiative. Under his watch, Microsoft has begun a security review of its entire code base. Lipner spoke with* Computerworld*'s Robert L. Mitchell about the Code Red worm, the state of the Windows code base and Microsoft's efforts to improve the security of its products.*

What role does the Secure Windows Initiative play at Microsoft? The Secure Windows Initiative is an effort to improve the security of all Microsoft products. It encompasses everything Microsoft ships. We attempt to improve security by improving processes, by providing training, by applying advanced tools and by improving the quality of our security testing.

Considering Code Red and the publicized vulnerability statistics of other viruses, Microsoft Web servers would seem to be more vulnerable to attack than other products. In terms of perception, I think a lot of that is because we have a lot of systems out there and because when there's a vulnerability, we shout it from the rooftops. We knew that [Code Red] was a serious vulnerability from the day it was reported to us. When we had the patch ready for that, we went out not only to our customers, but also to the press to say this is a serious vulnerability.

I think another factor is that because [Internet Information Server (IIS)] and Windows are so easy to use and because it's so easy to set up a Web server on IIS, people may, in some cases, do that without realizing that they have to worry about security, without realizing that there are security steps or security configurations that they have to apply [see chart].

IIS doesn't install securely out of the box. For a Web-facing product, why not default to a more secure install? With products that install with defaults, you're always making a trade-off in terms of what features are available and how they're configured.

That said, Internet Information Server 6 will walk you through a dialog that will ask what services you want. We expect that dialog will have the effect of getting the configuration right and secure for most users.

We also make available on the Web the IIS Lockdown [security configuration] tool and checklists for securing Web servers.

Microsoft released a Code Red patch on June 18, yet a month later, the worm infected more than 250,000 systems. How could that happen? The patch for Code Red was very likely the most heavily downloaded in our history. Why didn't more people install it? I think that it may be that people still don't subscribe to the Security Notification Service. They still don't go to [the] Windows Update [Web page, *http://windowsupdate.microsoft.com*], and we want to get the word out that those services are there.

Microsoft uses an internal program called Prefix to find vulnerabilities in its code base. What have the results been so far? [Prefix] runs a scan of an entire product's source-code base to detect patterns of potential programming errors that experience tells us are likely to be security-related and flags them for human review and correction.

Prefix takes a day or two to run across the entire Windows code base. It's run every couple of weeks throughout the [Windows .Net Server] development cycle. It started to be run after Windows 2000 shipped. .Net Server will be the first product that's had a development cycle of benefit from Prefix.

How successful have you been at rooting out those infamous buffer-overflow vulnerabilities? We've found and eliminated a lot. That said, it's important to stress that there are an infinite number of ways to run a program. And similarly, there are a vast number of ways that one can write a buffer overflow. [Prefix] is not a closed-form solution.

Last year, Microsoft released 100 security bulletins. What are you doing to make sorting through the bulletins easier? We're rolling out a severity rating system that will help customers understand how serious issues are. We're moving with Windows XP and .Net Server to much more reliance on Windows Update and the updating technology that will allow customers to install these patches and get automated notification with less effort.

HFNetChk is a command-line tool that lets an administrator look at a system to see what patches are installed and to prepare that configuration with the set of patches we've released for that system. It's a real-time tool in that it looks at an XML file we maintain on our Web site. We also released Microsoft Personal Security Advisor [*www.microsoft.com/security/mpsa*], which is targeted to the individual user with NT 4 or Windows 2000.

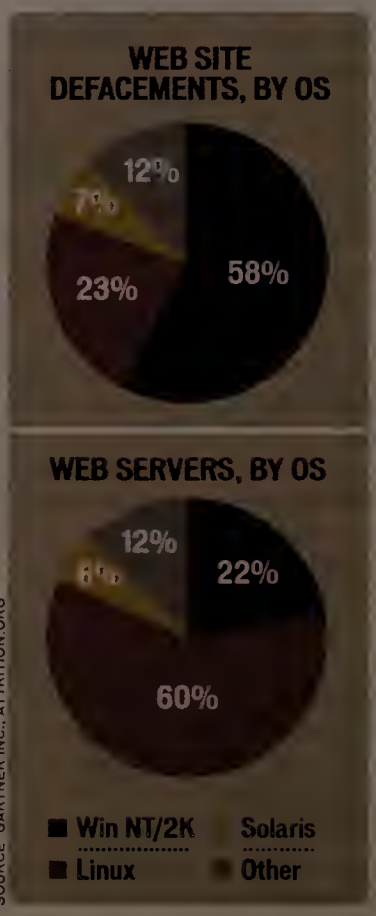
Ultimately, many administrators would like to see fewer security alerts and patches. When do you see that happening? I think that we're running at a slower rate in 2001 than we were in 2000, just in terms of bulletins by month, so that's a positive thing. It's our goal to continue to have the number of bulletins decline, but it's not something that we can say with certainty, "This is going to happen."

What other security improvements will we see in future versions of Windows? From a feature perspective, one of the key things will be better integration and ease of use around smart cards, both in the client and server product.

What are the most important things administrators should do today to ensure the security of Windows servers? We encourage them to run the HSNetChk tool or Windows Update and install the patches it advises you to install. We also have the Security Notification Service.

In terms of important patches or hot fixes, we encourage customers to be on the latest service pack: SP 2 for Windows 2000, SP 6a for NT 4.

IIS patches are now being released as roll-ups, or cumulatives, so if you apply a single IIS patch, it corrects all vulnerabilities going back in history. We encourage users to apply that in [bulletin] MS01-026 and then additionally the Code Red patch, which is MS01-033. ◗



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Compiler Vistas

Compilers are moving beyond traditional roles and are getting smarter at code optimization. By Gary H. Anthes

COMPUTER hardware and software are getting ever more complex, but programmers aren't getting smarter, and there aren't enough of them. Better compilers may brighten this gloomy scenario in coming years.

"We are in the middle of a radical shift in what compilers can do," says Andrew Ayers, chief scientist at InCert Software Corp. in Cambridge, Mass. Java and other languages introduce the concept of "just-in-time" compilation, by which applets or other chunks of code must be turned into optimized machine language at runtime. So now it's not enough for compilers to generate efficient code, as they have for years; the compiler itself must run quickly, Ayers says.

As a result, just-in-time compilers must be clever at finding the quick, big payoff optimizations while not bothering with code that's rarely executed. One way they're doing that is by program "profiling." That used to mean collecting performance data on how a program ran, then feeding that information back to the compiler so it could do a better job next time. But now profiling increasingly involves dynamically optimizing a program as it runs.

Ayers, formerly a compiler expert at Hewlett-Packard Co., explains: "The Java program starts up lightly optimized. The just-in-time compiler puts little monitoring probes in to see where it's actually spending its time and then takes those pieces out and optimizes them more heavily. And it can adapt; if the program behavior changes, the compiler can dynamically optimize some other part of the program."

Transmeta Corp. in Santa Clara, Calif., uses similar profiling in its "code morphing" technology. Its Crusoe processor, intended for use in mobile devices, consumes up to 70% less power and runs cooler than its Intel x86 equivalent by moving some instructions from hardware to software. It gathers statistics as it runs, and when it finds heavily used sequences of x86 instructions, it dynamically recompiles them into optimized native code for the Crusoe processor.

Another promising avenue of research has to do with optimizing the placement of data and code in the storage hierarchy that includes disk, main memory and the various levels of processor cache. Experimental compilers can analyze program behavior to know at which level to put data and then generate instructions to move pieces of data up and down the memory hierarchy.

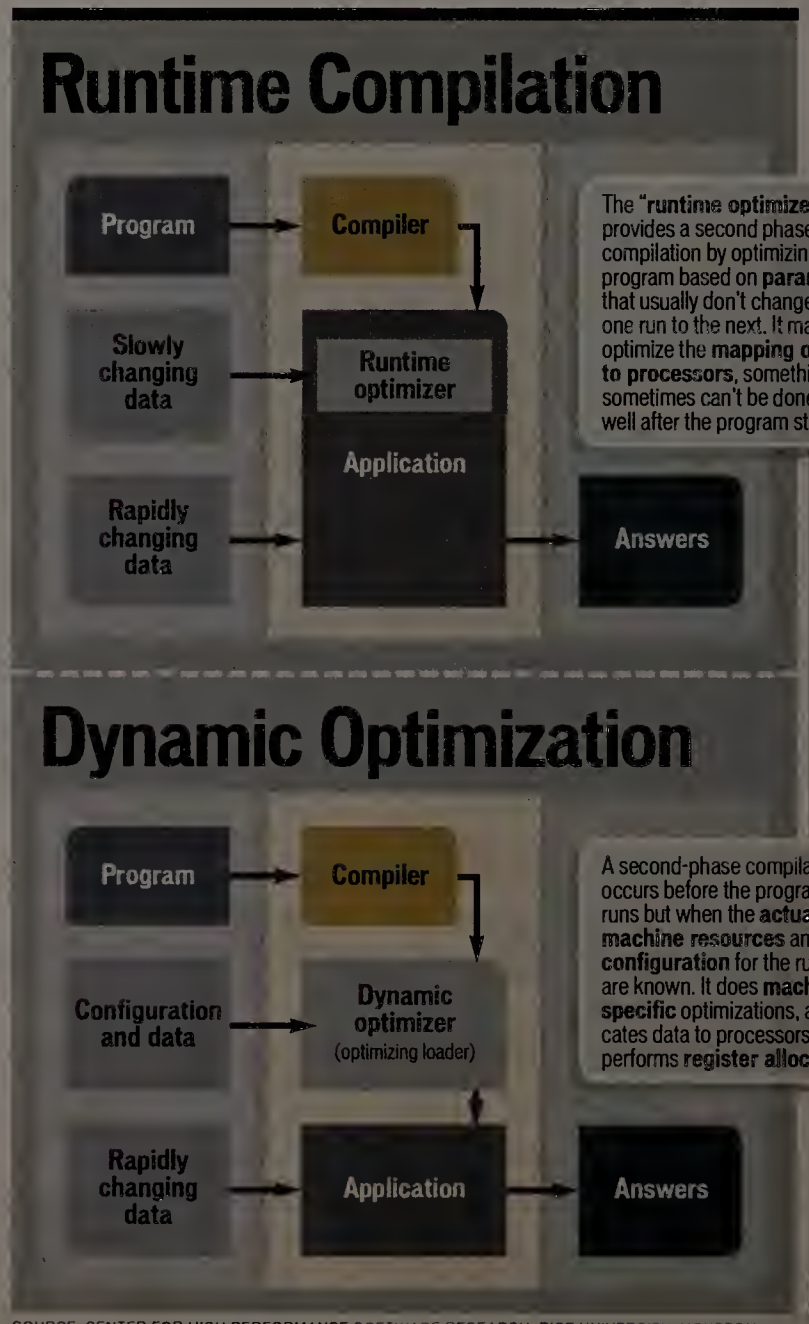
Todd Mowry, an associate professor at Carnegie Mellon University in Pittsburgh, is working on "prefetching," in which the compiler generates instructions that move data from main memory into the processor's cache memory before it's needed. He's also working on ways to move data from disk to memory in advance of need. "So if you are working on an enormous problem, and it's going to disk all the time, it automatically brings things in from disk millions of cycles ahead of time," says Mowry.

While techniques like profiling are used to optimize code at runtime, researchers at Rice University in Houston are moving optimization in the other direction. Ken Kennedy, director of the Center for High Performance Software Research at Rice, breaks compilation into two major phases. The first phase generates a programming language highly optimized for a certain type of use, such as matrix arithmetic for scientific applications or database querying for commercial work.

Based on a deep understanding of a given application domain, the language generator might spend hours compiling and optimizing routines commonly needed by programmers in that domain. The Phase 2 compiler that later sees the user's actual source code would then be able to substitute those highly optimized routines for the less efficient code supplied by the user.

"I envision that we'll have lots of end-user, domain-specific languages," Kennedy says. "So you can have people who are not trained in five years of object-oriented programming methodology building useful applications by integrating components written by professional programmers. Thus professional skills can go a lot further."

The same techniques that compilers use to produce efficient code can be used to help developers debug and tune their applications. "The compiler is really the thing that builds a model of program behavior," says InCert's Ayers. "You do that to generate machine instructions, but there are lots of other things you can do once you have that model. People are just starting to tap into that."



SOURCE: CENTER FOR HIGH PERFORMANCE SOFTWARE RESEARCH, RICE UNIVERSITY, HOUSTON

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Web Services

DEFINITION

Web services are a new class of applications that can talk and work with one another over the Internet.

BY MARIA TROMBLY

As more companies seek to conduct significant business over the Internet, they face the problem of making their applications work with those of their customers and suppliers.

The difficulty with this type of integration isn't that it's hard to get applications to send data and instructions to one another — you just decide on a common standard, write any needed converters, and that's it. But as the number of applications goes up, the number of possible communications paths increases much faster.

Until recently, the only solution to this problem was to go with a middleware product. For example, the Windows operating system, which you can think of as a very successful middleware application, provides a common messaging environment for much of today's desktop software.

But suddenly, all of those middleware vendors (including Microsoft Corp.) are scrambling furiously to position themselves to survive what's about to be a big shock to the current system: Web services.

Web services are applications that use a universal language to send data and instructions to one another, with no translation required. And they use the Internet, so most of the connection problems are eliminated.

So far, the Internet has been used primarily in a people-centric way. Applications send out data for humans to read through Web browsers. If another application is on the receiving end, it has to "scrape" the information off the screen (a task bound to fail as Web and application designers change page layouts and move elements around), or it has to use a dedicated back channel.

An example of a company using both strategies is Yodlee.com Inc., a Redwood Shores, Calif.-based provider of financial account aggregation services to banks and portals. Yodlee either scrapes your checking and credit card balances off Web pages by logging in and pretending to be you, or it asks each financial institution individually to send it the data.

It's a slow process. And just the kind of thing Web services could handle better.

What's to Come

Here's a hypothetical example of how Yodlee could work in a year or two, if banks were to create appropriate Web services: Tired of fielding numerous requests for data feeds, each bank could set up a Web service that provides account balances.

The address of the Web service would be published in a directory — the Universal Description, Discovery and Integration directory — which locates each Web service on the Internet.

Then each bank would write a description of what its Web service would require as input and what information would be given out in return. For example, the bank would want the customer's account number and personal identification number or password, and confirmation that payment for the information had been sent. The format for this description would be defined in the XML-based Web Services Description Language.

On the front end, the bank would need to limit access to customers' account balances to a select list of approved intermediaries. That would require authentication through passwords, public keys or other mechanisms. Then it might want to prioritize requests — say, by how much customers are paying the bank for the service. Finally, it would want to confirm that payment for the service had arrived and maybe even send a receipt.

Several vendors are lining up to enable all of these functions as Web services. One such vendor is Grand Central Networks Inc. in San Francisco, which offers a choice of authentication methods, access restriction, prioritization and nonrepudiation. Another security and authentication provider is New York-based CertCo Inc.

If a bank wanted to build a system from scratch, Microsoft offers BizTalk Server, which can handle logging, authentication and routing. On the back end, the Web service would have to get each customer's balance somehow. One way would be to scrape the data off a green screen or other interface. This isn't much more advanced than what happens today, except that the bank itself would be doing the scraping and thus could control the process.

Another alternative would be to turn the legacy application into a Web service by adding code or recompiling it to run on, say, Microsoft's emerging .Net platform. Microsoft claims that its .Net initiative supports a variety of languages and that it will be able to turn legacy applications into Web services when it's released later this year.

Existing middleware infrastructures could also be used for that purpose, and the leading vendors are lining up products — including IBM's WebSphere and San Jose-based BEA Systems Inc.'s WebLogic.

Now, the really interesting questions involve the longer-term implications of Web services. What happens when new applications can interact with all others — regardless of machine, language, operating system or middleware? What new, unforeseen applications may emerge from this capability? And will we be able to adequately safeguard such increased traffic?

More examples of Web services can be found at *www.xmethods.com*. Want to try some out? San Jose-based Adobe Systems Inc. has a Web service that translates HTML, graphics and Microsoft Office files into Portable Document Format files. It can be found at *https://createpdf.adobe.com*. Another Web service (*http://webservices.eraserver.net/zipcoderesolver/*) will look up the ZIP code of any U.S. address. ◗

Standards for Web Services

SOAP
Simple Object Access Protocol
Allows applications to pass data and instructions to one another.
For more information, visit the World Wide Web Consortium's site at *www.w3.org/TR/SOAP/*.

WSDL
Web Services Description Language
Allows a Web service to be described so it can be used by other applications.
For more information, go to *www.w3.org/TR/wsdl*.

UDDI
Universal Description, Discovery and Integration
Allows a Web service to be listed in a directory of Web services so it can be easily found.
For more information, go to *www.uddi.org*.

Trombly is a freelance writer in Belchertown, Mass. She can be reached at maria@trombly.com.

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Wireless Network Fails Corporate Security Test

Newly mobile offices require additional security layers to compensate for wireless LAN vulnerabilities

BY VINCE TUESDAY

NORMALLY, when you mention "mobile," information security people think of the Wireless Application Protocol (WAP) with its Wireless Transport Layer Security, or perhaps 802.11b wireless LANs using the Wired Equivalent Privacy standard. But technical acronyms aside, in my attempts to secure a new mobile office, I'm finding the state of the art lacking.

SECURITY MANAGER'S JOURNAL

We recently won some business overseas, so we must very quickly set up an office that can be rapidly deployed and moved. The remote office will be in apartment blocks and other organizations' offices. Network wiring won't be possible, so we'll be using wireless LANs. Deploying a telephone exchange is also too time-consuming and complicated, so we'll use mobile phones for a quick deployment. To reduce airtime costs, we'll use voice over IP for normal calls back to the office.

I don't like wireless products. They may be quick to deploy and easy to scale, but they're designed with security bolted on as an afterthought. Much of my career has been devoted to ensuring that systems and networks are secure. Traditionally, I begin by identifying the boundary of the problem and then work my way in, adding layers of security until I reach the protected core. Wireless and mobile systems don't fit this model: The boundary of the problem is the edges of the universe.

Does that sound like hyperbole? Talk to the designers of the Russian microwave towers built to send data across Siberia. The strength of microwave transmission, from a security perspective, is its tightly focused beam. To intercept the signal, you would have to get within the line of sight. The Russians could be fairly confident that no secret listening posts had been constructed in the middle of their steppes.

However, part of the secret Echelon system run by the National Security Agency consists of orbiting satellites that perform a wide range of surveillance tasks. These geostationary satellites are positioned in the extended line of sight between the Russian towers and gather all the microwave signals that are beamed past the target tower and into outer space.

Realistically, few of us worry about such a high level of investment in snooping our networks. However, as we move to wireless, the drive-by hack, where people drive around metropolitan areas with wireless devices, searching for private information being broadcast, will become an issue for all.

High-Level Security

We looked at a wide range of wireless LANs and found them all to be very easily sniffed and spoofed. To avoid these risks, we connect all of the remote devices to our backbone over a virtual private network (VPN). There's a firewall between the base station and the mini-LAN that houses our VPN concentrator. Each machine on the wireless network also runs personal firewall software. This limits the access that any attacker might have to the core and remote machines.

It also ensures that all data sent has proper protection beyond that offered by the wireless network. Essentially, we don't trust the network fabric, so we use the higher layers of the protocol to secure our data.

This approach adds expense to the deployment and makes it harder to connect new devices. For example, we have no VPN software for printers, so users won't be doing wireless printing. The users want to avoid delay and complication, so they will no doubt try to circumvent the controls. I'm sure we'll soon find unauthorized access points added to our networks, although our scans haven't found any yet.

The staffers left to begin work overseas before the office could be designed and set up, so they're trying to make do with dial-in connections back to the head office. These are slow and unstable, so the users argue that they should be allowed to connect through the Internet for the majority of their work. Our Internet connections are closely protected and monitored. A single laptop connecting via the Internet won't have any of these protections and will be a tempting target for hackers and their automated worms.

To meet the business requirement of a fast deployment, we have turned a blind eye to these possible direct connections until we can deploy a proper remote-access system. We have been backed into the old problem: Users see security as adding overhead in time and cost and risking new business. At the same time, our controls have protected users from the rash of virus and worm incidents that have hurt other companies and from the less-publicized risk of compromise.

The perception of our team varies, depending on where the managers are sitting. Inside our perimeter, safe and sound from the threats, they commend us on the good job we do to keep ourselves secure. But put them in a partner office or send them traveling, and they soon change their tune, calling us restrictive and anal-retentive.

I think we have the right balance. Compared with many companies we work with, our time scales for tests, reports and deploying new infrastructure are very aggressive, and yet this still isn't good enough. Time scales and budgets shrink, while the scope of the problem only increases. If I didn't have my job and reputation on the line, it would be interesting to bet on which will lose: the lust for faster deployment or the desire for high security.

I'm interested in hearing about how others are securing their mushrooming wireless networks. I'll look for your tips and comments in the Security Manager's Journal forum.

Note: *Hush Communications Corp., which hosts my e-mail account, recently upgraded its HushMail systems, resulting in an ongoing series of problems. Some readers' e-mails have been lost, and some readers have reported receiving five copies of a response — or none at all. I apologize for these problems, which I hope will be resolved shortly. In the interim, I suggest posting your comments in the Security Manager's Journal forum.*

THISWEEK'SGLOSSARY

Wireless Transport Layer Security (WTLS): This protocol supports security on mobile devices running WAP. WTLS is based on Secure Sockets Layer but is modified to support User Datagram Protocol and TCP transport protocols to deal with the long transmission times and the low processing power of mobile devices.

Wired Equivalent Privacy (WEP): This algorithm is the encryption mechanism for protecting data transmitted over 802.11b wireless LANs. The standard is based on a 40-bit RC4 algorithm to encrypt data prior to transmission. The proposed WEP2 standard will address some of the vulnerabilities by implementing 128-bit encryption. But WEP2 is still based on RC4 encryption.

LINKS:

www.isaac.cs.berkeley.edu/isaac/wep-faq.html: Worried that WEP doesn't cut it? You're right! Read this list of frequently asked questions for the details, and buy properly secure VPN clients for all your machines that are going to communicate via a wireless LAN.

www.cypherpunks.ca/bh2001/mgp00001.html: Ian Goldberg, a cryptologist at Montreal-based security and privacy software developer Zero-Knowledge Systems Inc., along with researchers at the University of California, Berkeley, uncovered flaws in the IEEE 802.11 standard. Goldberg published this paper on the subject.

Quick Link: For more on the Security Manager's Journal, including past journals, visit. **www.computerworld.com/q?q2000**

■ This week's journal is written by a real security manager, "Vince Tuesday," whose name and employer have been disguised for obvious reasons. Contact him at vince.tuesday@hushmail.com or go to the Security Manager's Journal forum.

Wireless Software Aggregates Web Data

Orsus' portal development software unifies views of data from different sites

BY AMY HELEN JOHNSON

WHAT IF YOU could integrate business information from another firm's computer systems without requiring technical cooperation from that company? The process would be faster, cheaper and simpler, says Aryeh Finegold, CEO of Orsus Solutions Ltd.

The Mountain View, Calif.-based start-up's Orsus Uno application development suite lets companies build wireless applications and Web portals that combine information from different Web pages, databases and applications — even ones external to those companies.

Such capabilities were just what Ameritrade Holding Corp. wanted. Since the fall of 1999, Ameritrade has offered customers a consolidated statement of all their banking and brokerage accounts using log-in and password keys that are supplied by customers for those accounts, says Raymond Dury, co-CIO at the Omaha-based financial services firm.

But the way the homegrown system was implemented was expensive, had technical difficulties and resulted in high levels of customer support.

An Easier Way

In April last year, Ameritrade started using Uno to pull data off external systems and deliver it to customers via the Web or Wireless Application Protocol (WAP)-enabled phones.

Orsus offers an easier way of linking external systems, according to James Van Dyke, research director at New York-based market research firm Jupiter Media Metrix Inc. "The idea of aggregating data is a shortcut to having to integrate the old-fashioned way," he says.

In the case of Ameritrade, says Cecil Wade, vice president of portal development, the cycle for adding an institution to the list of accounts Ameritrade can access is only two days. In addition, the request can be handled using the company's existing staff of only four programmers, says Wade.

What makes development faster, he says, is that when Uno parses a target Web page or query result, it categorizes all of the component pieces, such as graphics interchange format files, tables, text fields, banners and so forth. That makes it easy for developers to identify the important information and quickly discard items Ameritrade doesn't care about. Then, using Uno's visual development interface, Ameritrade's programmers can generate a script for the Uno server engine that pulls relevant information into a database for delivery to customers.

Uno's server engine is written in Java and compliant with Java 2 Enterprise Edition, enabling it to run on Web application servers from a range of vendors. The software runs on Windows 2000, HP-UX, Solaris and Linux servers.

Out of the box, Uno supports integration with most enterprise resource planning systems, XML data, HTML pages, SQL databases and other back-end enterprise software, the company claims. The resulting aggregated application that Uno generates can be delivered to standard Web browsers, personal digital assistants, WAP-enabled phones and regular voice phones.

Some Limitations

Although Ameritrade didn't encounter any serious problems in launching its Uno-based accounts page, Wade uncovered some limitations when working with Uno. When a site uses ActiveX controls or Java on its pages, Uno can't always lift data cleanly out of the page, he says.

One way to solve problems with reaching certain data sources, says Finegold, is to write custom integration interfaces. Orsus recently released a software development kit that lets IT departments script their own data aggregation routines.

Aggregation technology is still new, according to Van Dyke. "Aggregation is talked about a lot, but it's anything but proven in its adoption path," he says. Other companies have had to change their niche and strategy a few times before finding success, Van Dyke explains. The same may be true with Orsus. ◗

Johnson is a Computerworld contributing writer in Seattle.

CINDY CHARLES

ORSUS' WIRELESS portal software can aggregate data from multiple sources across the Web, says CEO Aryeh Finegold.

Orsus Solutions Ltd.

1616 North Shoreline Blvd.
Mountain View, Calif. 94043
(650) 988-9100

Web: *www.orsus.com*

The technology: The company's wireless and Web application development suite aggregates data from external Web sites and other data sources and combines it into a single portal view.

Company officers:
- Aryeh Finegold, CEO and co-founder
- Amir Weinberg, chief technology officer and co-founder
- Gwen Durrill, vice president of development

Milestones:
- March 1999: Company founded
- May 2000: Released first product, iGlue/Web
- July 2000: Released iGlue/Wireless
- June 2001: Released new suite, renamed Uno

Employees: 140

Burn money: $68 million in 2000 from Cedar Fund, Clal Industries and Investments Ltd., Koor Corporate Venture Capital and others

Products/pricing: Orsus Uno starts at $100,000.

Customers: Ameritrade, Bank Leumi Ltd., Bank Hapoalim Ltd., NeoMedia Technologies Inc. and Partner Communications Co.

Red flags for IT:
- Customers have experienced difficulties tapping data from Web sites that rely on Java or ActiveX controls.
- Wireless application vendors are consolidating. Will Orsus survive?

COMPUTERWORLD emerging companies

[the buzz]
STATE OF THE MARKET

The Wireless Squeeze

David Scott Lewis, a vice president at Meta Group Inc. in Stamford, Conn., says the wireless application integration market as a whole is in trouble.

The adoption rate among enterprises for these types of applications is low, due in large part to a slower economy that has pushed mobile technology projects to the bottom of IT managers' to-do lists, Lewis says

Furthermore, customers must sort through offerings from about two-dozen companies, each of which takes a different approach, Lewis says. There's no accepted standard.

But Orsus needs to keep an eye on the big enterprise software vendors. If companies such as San Mateo, Calif.-based Siebel Systems Inc. and Dallas-based i2 Technologies Inc. decide to build add-on wireless modules, Orsus could be hurt.

Nonetheless, Lewis predicts that "Orsus is going to be one of the winners." But winning, he points out, could mean staying independent or merging with an enterprise application integration or supply chain management vendor.

In contrast, many of Orsus' wireless-focused competitors will starve due to a lack of funding, says Lewis. But, he says, at least these two competitors will stick around:

AvantGo Inc.

San Mateo, Calif.
www.avantgo.com

In addition to providing tools to corporations to build wireless access to enterprise applications, as Orsus does, AvantGo has a subscriber base that it markets to companies that want to sell information and services to this group of customers.

Brience Inc.

San Francisco
www.brience.com

Brience offers a similar tool set for bringing wireless applications to the enterprise. It also delivers enterprise data to personal digital assistants and WAP-enabled phones using a suite of tools that includes a graphical development environment and distribution servers that support Java.

– Amy Helen Johnson

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Kathrine Roberts, Mainframe Programmer, West Corporation

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Dissecting the Windows 2000 Server Exam

Part 1 of a 3 Part Series

The Installing, Configuring and Administering Microsoft Windows 2000 Server exam (#70-215) became available in June as a requirement in the Windows 2000 MCSE certification track. As of Fall 2000, it does not employ adaptive testing, but is a standard exam with a large number of verbose questions. It is administered through both Virtual University Enterprises (www.vue.com) and Prometric (www.2test.com) testing centers and, like all Microsoft exams, costs $100 to take.

Exam Specifics

There are 51 questions asked, and a candidate has 120 minutes to answer them, with a required passing score of at least 660 (translating to passing with 34 right answers). While all of the questions are overly wordy, many also employ screen shots or diagrams. A preponderance of the questions are single-answer multiple choice (indicated by a radio button) or multiple-answer multiple choice (indicated by check boxes). The majority of the latter tell you how many selections to make, while a few ask that you choose all that apply. A few questions employ other technologies, such as drag-and-drop (referenced as "Select and Place.")

The objectives for the exam are divided into seven categories, although the score report does not show individual performance within each. The seven categories are:

1. Installing Windows 2000 Server
2. Installing, Configuring and Troubleshooting Access to Resources
3. Configuring and Troubleshooting Hardware Devices and Drivers
4. Managing, Monitoring and Optimizing System Performance, Reliability and Availability
5. Managing, Configuring and Troubleshooting Storage Use
6. Configuring and Troubleshooting Windows 2000 Network Connections
7. Implementing, Monitoring and Troubleshooting Security

A complete listing of the sub-objectives, as well as the audience profile the exam is targeted for, can be downloaded from www.microsoft.com/trainingandservices/exams/examasearch.asp?PageURL=/TrainingAndServices/content/exams/70-215.txt. This article looks at the exam in terms of the seven categories and what you must know to pass each.

Installing

The bare minimum requirements for Windows 2000 Server are equal to a Pentium 133 (Intel-based hardware only), with at least 128MB of RAM (256MB recommended) and 1GB of free hard drive space. It is always highly advocated that the Hardware Compatibility List (HCL) be examined before doing any installations. There is a copy of the HCL file on the installation CD, but the newest copies are accessible at Microsoft's Web site.

You can upgrade only from Windows NT Server 3.51, Windows NT Server 4.0 and Terminal Server (4.0). Anything else is essentially considered a clean installation. The Server product supports up to four CPUs, while Professional will work with two and Advanced Server will support eight.

The simplest installation of all is an attended installation, whether it be from the CD or over the network. Depending upon the existing operating system, either Winnt.exe or Winnt32.exe is used to start the installation. The major functions and switches utilized by the two executables differ, as Figure 1 shows.

Figure 1: Differences in Winnt and Winnt32

Purpose	Winnt parameter	Winnt32 parameter
Specify a temporary drive to use other than the default	/t	/tempdrive
Use an answer file to automate setup	/u	/unattend
Execute a command at the end of setup	/e	/cmd
Check for upgrade compatibility		/checkupgradeonly
Add the Recovery Console to the installation		/cmdcons
Don't restart after the copy operation		/noreboot

Upgrades to Windows 2000 come in the form of service packs. Each service pack contains patches and fixes to operating-system components needing such, as well as additional features. A service pack is a self-running program that modifies your operating system. It isn't uncommon within the lifetime of an operating system to have two or three service packs.

Successive service packs include all files that have been in previous ones. Therefore, if you perform a new installation and the latest service pack is Service Pack Four, you do not need to install Service Packs One, Two and Three. You need only install Service Pack Four after the installation to bring the operating system up to the current feature set.

During the installation, Windows 2000 creates six log files at various stages along the way. All six logs are created within the %SystemRoot% or %SystemRoot%\Debug folders (C:\WINNT and C:\WINNT\DEBUG, by default). If you have a puzzling problem, look at these logs and see if you can find error entries there.

Accessing Resources

Share permissions apply only when a user is accessing a file or folder through the network. Local permissions and attributes are used to protect the file when users are local. With FAT and FAT32, you do not have the ability to assign "extended" or "extensible" permissions, and the users sitting at the console effectively are the owners of all resources on the system. As such, they can add, change and delete any data or file that they wish.

With NTFS as the file system, however, you are allowed to assign more comprehensive security to your computer system. NTFS permissions are able to protect you at the file level, while share permissions can be applied to the directory level only. NTFS permissions can affect users logged on locally or across the network to the system where the NTFS permissions are applied. Share permissions are in effect only when the user connects to the resource via the network. Figure 2 shows possible NTFS file permissions.

As with earlier versions of the operating system, in Windows 2000 the default for newly created entities is equal to Everyone–Full Control. The No Access permission, however, that was available in all previous versions of NTFS (meaning in Windows NT) does not exist in NTFS 5 and Windows 2000. The Deny permission overrides all other permissions. In the absence of Deny, rights accumulate through individual and group assignments, as well as through folder and file assignments. In the case of a conflict, file permissions override folder permissions.

Moving or copying a file to a new directory could change the permissions on an NTFS file. This depends on whether the file is moved or copied and on whether the target directory is on the same NTFS volume as the original.

When a file is copied from one directory to another on the same NTFS volume, the file inherits the directory permissions for new files of the target directory. When a file is moved from one directory to another on the same NTFS volume, it retains the NTFS permissions it had from the original directory.

Figure 2: NTFS File Permissions

NTFS Permission	Meaning
Full Control	Gives the user all the other permissions as well as permission to take ownership and change permission.
Modify	Combines Read & Execute permissions with Write permission and further allows the user to delete the file.
Read & Execute	Combines the permissions of Read with the ability to Execute.
Read	Allows the user to view the contents of the file and see ownership and attributes.
Write	Allows the user to overwrite the file, as well as to change attributes and see ownership and permissions.

This concept gets confusing when files are moved or copied from one NTFS volume to another NTFS volume. When you copy a file from one NTFS volume to another, the file will always inherit permissions of the target directory. The same is true when you move a file between NTFS volumes. This is due to the fact that the file is not actually moved between NTFS volumes. The actual process is outlined here:

1. The file is copied to the target directory. This causes the file to inherit the permissions of the target directory.
2. The file in the target directory is compared to the original file, and it's verified that the two are identical.
3. The original file is deleted from the original directory.

A printer name can be contain up to 32 characters; it doesn't have to reflect the name of the driver, device or any other item in use. As you can with other resources and shares, you can place a dollar sign ($) at the end of the name to prevent it from being visible to all other users, even though you may choose to share it. When adding a printer from the network, if you do not know the path, you can leave the field blank and click Next to invoke the Browse feature. No such browse feature is available for the Internet printer option, so you must specify an URL to go on to the next dialog box of the setup wizard.

Printer Priority is in no way related to Print Job priority. The priority for a printer defaults to One, but it can be any number between one and 99. When more than one printer is printing to the same device, it is useful to change priorities (to allow the one with the highest priority to print first).

A printer pool offers an efficient means of streamlining the printing process in many environments. By the simplest definition, a printer pool is a single logical printer that prints to more than one printing device. It prints jobs sent to it to the first available printing device and provides the throughput of multiple printing devices with the simplicity of a single printer definition. Windows 2000 ensures that no single device is ever sent more than one document at a time if other devices are currently available. This ensures efficient utilization of all printing devices.

Stay Tuned - Part II Series
October 1, 2001 issue

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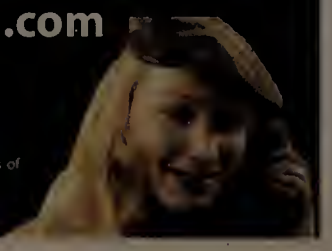

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Letters to the editor are welcome and should be sent to: **letters@computerworld.com.** *Include your address and telephone number.*

MAIL ADDRESS

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Phone Ray Trynovich (717) 399-1900, ext. 124
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CONTACTING CW EDITORS

We invite readers to call or write with their comments and ideas. It is best to submit ideas to one of the department editors and the appropriate beat reporter.

Editor in Chief Maryfran Johnson (508) 820-8179
Editorial Director, Print/Online Patricia Keefe (508) 820-8183

DEPARTMENT/ BUREAU EDITORS

News Editor Don Tennant (508) 620-7714
Assistant News Editor Craig Stedman (508) 820-8120
Business Editor Thomas Hoffman (845) 988-9630
Technology Editor Tommy Peterson (508) 620-7729
IT Careers Editor David B. Weldon (508) 820-8166
Washington Bureau Chief Mitch Betts (202) 737-6049
West Coast Bureau Chief Pimm Fox (650) 524-7116

REPORTERS

Mobile computing/wireless Bob Brewin (301) 277-8069
Internetworking, telecom/wireless, defense and aerospace James Cope (219) 273-5369
Application development, Java, Web infrastructure, automotive Lee Copeland (773) 278-0234
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Web server technology, security, heavy manufacturing
General assignment, Linux and Unix operating systems Todd Weiss (717) 560-5255

OPINIONS

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Columns Editor Rick Saia (508) 820-8118

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Editor at Large Mark Hall (503) 391-1158
Reviews Russell Kay (508) 820-8175
Special Projects Editor Julia King (610) 532-7599
Technology Evaluations Editor Robert L. Mitchell (508) 820-8177

FEATURE WRITERS

Gary H. Anthes (202) 737-7242
Matt Hamblen (508) 820-8567
Kathleen Melymuka (508) 628-4931
Kim S. Nash (773) 275-4133
Deborah Radcliff (707) 829-5823
Melissa Solomon (508) 620-7754

COMPUTERWORLD.COM

Director, online and design Tom Monahan (508) 820-8218
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Online news editor Ken Mingis (508) 820-8545
Online news editor Marian Prokop (508) 620-7717
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CONTRIBUTING COLUMNISTS

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CONTRIBUTING WRITERS

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Alternative Nets Essential In Dealing With Disaster

Multiple lines of communication keep workers in touch and can help in recovery

BY BOB BREWIN
AND MATT HAMBLEN

TO AVOID stranding key employees who are on the road during a disaster, enterprises and mobile workers need to develop in-house network savvy and prepare plans for access to alternative communications systems. And they need to do so now.

Those were recommendations from both users and analysts in the wake of the Sept. 11 terrorist attacks on the U.S., which forced companies and their employees to rely on ad hoc networks to stay in touch and even help them escape the carnage.

At the simplest, this will mean "traveling with more than one network," said Craig Mathias, an analyst at Farpoint Group in Ashland, Mass. It's especially important to have a wireless data backup system to replace cellular voice networks. The latter quickly became overwhelmed by traffic in the hours immediately after the attacks on the World Trade Center in New York and the Pentagon.

That was the experience of Adam Broun, a partner in the financial services group at New York-based Deloitte Consulting. He said the only service he could use at the time was mobile e-mail through a Research In Motion Ltd. BlackBerry pager operating on the packet data network of the Cingular Interactive unit of Cingular Wireless in Atlanta.

Broun called his Cingular Interactive service "the most reliable means of communications" after the disaster, adding that he used his BlackBerry to direct colleagues trapped in the financial district to a ear he had rented for them in Brooklyn, including guidance on getting to Brooklyn and then getting get out of the borough.

Cingular Interactive operates nationwide on separate frequencies and has different wired connections than the Cingular Wireless voice network, allowing it to function while the voice network became clogged with calls.

Enterprises and users also need to educate themselves about the utility of Short Messaging Service (SMS). Widely used throughout the rest of the world, SMS is still "a bit of sleeper" in the U.S., said Greg Pinter, a vice president at MobileWay Inc. in San Ramon, Calif. MobileWay is an aggregator of SMS services that resells them to companies such as airlines, which then use them for passenger notification.

SMS, offered by all the major U.S. carriers except for Kansas City, Mo.-based Sprint PCS Group, is ideally suited for brief messages such as "I'm OK," which many users and enterprises sent on the day of the attacks.

Since SMS operates in the digital control channel of cellular voice networks, SMS messages managed to get through those networks when voice calls couldn't, said Danielle Perry, a spokeswoman for AT&T Wireless in Redmond, Wash.

Perry said the AT&T Wireless network showed a significant increase in SMS traffic beyond the normal 1 million messages handled per day. Pinter estimated that AT&T alone carried 20 to 30 times its normal volume on the day of the attacks. ◗

Continued from page 1

Projects

man Andy McDill.

Officials at defense contractor Raytheon Co. in Lexington, Mass., and office supplies retailer Staples Inc. in Framingham, Mass., issued similar statements.

Christopher Kairys, e-business manager at Pittsburgh-based Mine Safety Appliances Co., said the maker of respirators, safety harnesses and other protective equipment is "marching ahead full steam" with an online product catalog that's due by month's end.

Mine Safety's products include self-contained breathing apparatus and items such as harnesses and lanyards that can be used to descend into confined workspaces. After the attacks on the World Trade Center, Kairys said, the entire company mobilized to help ship equipment to New York for use by rescue workers.

But now, Kairys said, his group is back at work on the software installation and intends to finish the catalog project on schedule.

On the other hand, The Boeing Co. said its IT plans are still being assessed. "The industry we largely support is still very much in flux, and it's hard to make decisions [about IT] until what's going on with the airlines sorts itself out," said spokesman Jim Proulx. Chicago-based Boeing announced plans to lay off up to 30,000 workers in the next 15 months.

Karen Peterson, an analyst at Gartner Inc. in Stamford, Conn., said many of the users with whom she has spoken have also adopted wait-and-see attitudes toward IT projects. "Companies don't know if they should move ahead or hunker down," she said.

IT budgets will likely follow the overall direction of the economy, said Howard Rubin, an analyst at Stamford-based Meta Group Inc. "History shows one of the first places [companies] are going to cut is IT, because it's counted as a cost," he said.

Rubin said he expects long-term payback projects such as customer relationship management and e-commerce systems to be affected the most if IT budgets do get pared back. Users may also divert money from other projects to plug holes in their disaster-recovery capabilities, he added.

E-commerce initiatives could be especially at risk, said Louis Columbus, an analyst at AMR Research Inc. in Boston. "It's almost like a crucible time for e-commerce," he said. "It's going to have to prove it's solving real problems and delivering real value in order to stay funded during a crisis."

One user that's thinking about expanding its IT efforts is The E.W. Scripps Co., which owns newspapers, TV stations and other businesses.

"We don't have any plans to [cut back]," said Bob Benz, director of online newspaper operations at the Cincinnati-based media conglomerate. "This has us thinking about what we need to do in the other direction." ◗

Some Vendors Delay Product Launches

For the past six months, Ariba Inc. executives have been touting a planned fall upgrade of the struggling business-to-business vendor's sourcing software, which helps buyers find suppliers. It was meant to be Ariba's big boost heading into the fourth quarter.

But no one was talking about the upgrade on the day of the planned launch last week.

Sunnyvale, Calif.-based Ariba postponed the scheduled product release because of the Sept. 11 terrorist attacks. "There were logistical problems, but we also didn't think anybody would be all that interested [last] week," said an Ariba spokeswoman.

Other technology vendors, many of which are also counting on new products to help perk up their sagging sales, face a similar quandary. And it isn't clear what time will be considered more receptive for such a rollout.

For example, Contivo Inc. delayed its latest project modeling software release by two weeks, but many of its target customers are in the financial services industry. "We understand that buying decisions could be rolled back a quarter, maybe two," said Indra Mohan, CEO at Mountain View, Calif.-based Contivo.

But others are pushing ahead. IBM last week announced plans for a WebSphere Commerce Business Edition Version 5.1 package aimed at business-to-business users. Ed Harbour, IBM's director of e-business products, said IT purchases may slow down for a few weeks. But the company expects sales to return to normal after that, he said.

– Michael Meehan

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BPA ABM

FRANK HAYES/FRANKLY SPEAKING

Secure Your Users

AND NOW, NIMDA. Will these attacks never end? The answer, unfortunately, is no. They won't ever end. The Nimda worm that surfaced last week apparently has nothing to do with the terrorist attacks at the World Trade Center and the Pentagon the week before. It doesn't even have the politically oriented payload of the Code Red worm that attacked Whitehouse.gov in July. Nimda just tries to break things — PCs, servers and the Internet as a whole.

Nimda isn't the cyberterrorism that security experts have been warning about. It's just one more malicious worm.

True, it's a particularly nasty worm. It delivers itself by e-mail and through Web sites and via infected servers. It also tries to drill in through more vulnerabilities than any other worm. It overwrites files, opens users' hard drives to outside access and lets attackers gain control of servers.

But it's still just a worm — one more security threat we need to take care of.

Which means if you didn't apply those patches to your Microsoft IIS servers when Code Red and Code Red II and Code Blue blew through, you should have lots more incentive to do it now — even if the patches blue-screen your machines. A Nimda infection means you'll have to wipe your server and rebuild its software from the ground up.

If you haven't regularly tweaked your firewalls and other security technology, it's time to start making a habit of it.

And then there's the biggest, most obvious security problem in your organization: your users.

It's not news that users shouldn't open unsolicited e-mail attachments. And that they shouldn't change security settings on their e-mail clients or Web browsers. And that their antivirus software should be updated regularly.

Yes, you're tired of telling them, and they're tired of hearing it. But now's the time to bring those issues up again.

This time, though, don't deliver the exhortations by way of memos, manuals or managers. That didn't work before, and it's not going to work any better now.

This time, you're actually going to have to talk to users. Face to face. One on one, if necessary.

And instead of just telling them what to do — and what not to do — you'll have to ask why they keep doing the things that put the whole company at risk.

And you'll have to get answers. You'll have to *insist* on answers. Even if you have to run their managers out of the room while users give you those answers.

Why do they open unsolicited e-mail attachments? Is it just curiosity? Habit? A real business need you don't know about? Find out. Then find a way to block, filter or scan attachments to make life as easy as possible for users — with a minimum of risk for your systems.

Why do they change security settings? Is it because high security settings break some Web sites' functionality? Which ones? Ask, then look for ways to give users access without raising the risk level.

Why don't users keep their antivirus software updated and run it regularly? Do they know how — or even that they're supposed to? Or, if it's an automated process, are you sure you've set the script to run at an appropriate time? Friday at 8 p.m. isn't such a great choice if users are now encouraged to turn off their PCs to save electricity when they go home for the weekend.

Everything you learn — every solution and improvement and workaround you find to get users supporting security instead of fighting it — makes your systems more secure.

Saying "don't" won't do it. And things won't get better by themselves. There *will* be more worms — and worse.

But every time we take care of a vulnerability, we're a little safer. And users are the biggest vulnerability of all. ◗

FRANK HAYES, *Computerworld*'s senior news columnist, has covered IT for more than 20 years. Contact him at **frank_hayes@computerworld.com**.

SHARK TANK

NEW HIRE PILOT FISH asks IT shop to change his e-mail client from Outlook Express to Outlook. When he returns, tech tells him, "I forgot my password, so I reformatted your hard drive and reinstalled your OS. You've only been here for a week, so I didn't think you'd lose much." And, grumbles fish, his e-mail client is still Outlook Express.

NEW IT DIRECTOR in his first week on the job asks finance manager, "Why are all the computers locked up in storage?" Finance manager replies: "They're expensive, and the employees will only break them."

MIDWEST TOWN'S IT manager gets a puzzled e-mail from his boss: "Heard that the senior center will not let people have open access to the Internet because they think it is costing them and is draining their electricity. Can you find out from the director what this is about and assure her that the reason the mayor put in the lab was for seniors to have free and open access to the computers?"

PILOT FISH finds a way to cut troubleshooting time on one common technical problem from more than an hour to less than five minutes. He proudly explains the process to the boss, who nixes the idea. You're only one of 27 troubleshooters, boss says – and it's not fair that you can do more work than they can.

WHY ISN'T the project plan in yet? high-level manager asks pilot fish. Fish explains that one contractor hasn't come up with an estimate, so fish doesn't know how much time to schedule. "Write that up so I can escalate the issue," boss says. "And make sure you include the number of days it'll delay delivery!"

FARMING SOFTWARE company's boss is an old farmer himself, says developer pilot fish. Boss can't figure out why, whenever he reviews the most recent build of an incomplete project, it's buggy. So he calls a meeting to ask everyone – nicely – to "just stop writing bugs."

Don't stop writing me: **sharky@computerworld.com**. You get a sharp Shark shirt if your true tale of IT life sees print – or if it shows up in the daily feed at *computerworld.com/sharky*.

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